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ABSTRACT

Three conference papers describe the implementation behavior modification principles with severely handicapped (severely and profoundly retarded) institutionalized children, predelinquent adolescents in a group home, and educable retarded students in a special education secondary program. Discussed in the first paper on a behavioral approach to teaching social skills to the severely handicapped are such basic concepts as behavior measurement, contingent reinforcement and shaping techniques. A token economy is the model presented in the second paper dealing with predelinquent boys. Described are program elements including the community relationship, family-style environment, family therapy, and teacher-parent training, along with the motivation system's three major components (point system, social reinforcement system and self-government system). The use of a token economy with educable students in a cooperative special education and vocational rehabilitation program is considered in the final paper. Reviewed are program objectives, the "open" token economy system, the use of sequenced job instructions, as well as the academic program (f junior and senior high levels) and the work activities program (including print laboratory tasks and activities in daily liv). (CL)

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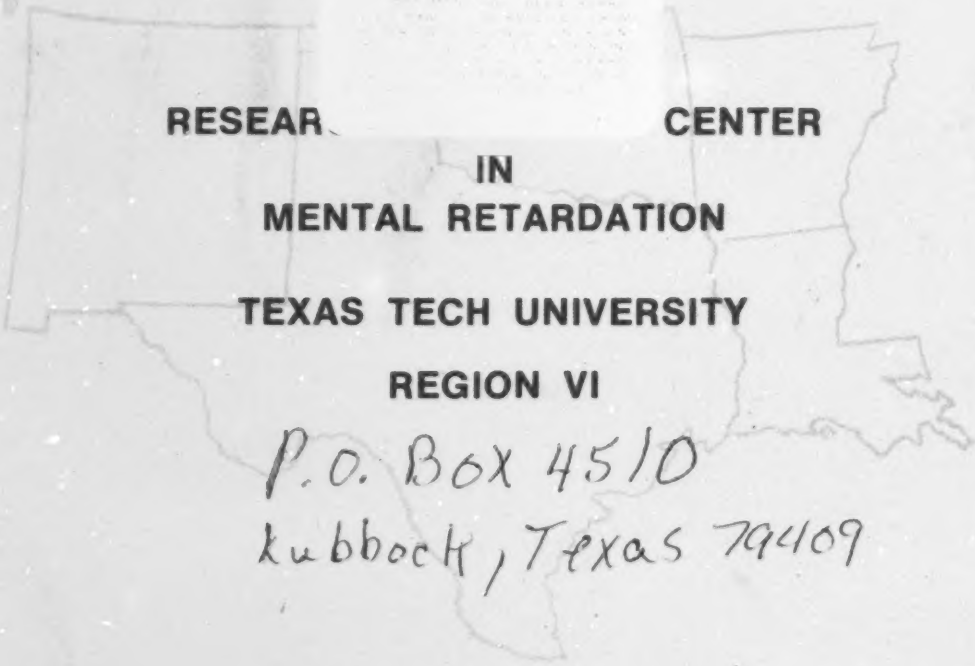
Behavior Modification in Three Settings

Edited by Carol K. Sigelman



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BEHAVIOR MODIFICATION

IN THREE SETTINGS

Edited by

Carol K. Sigelman

Research and Training Center in Mental Retardation

Monograph No. 2

Texas Tech University
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FOREWORD

The Research and Training Center in Mental Retardation at Texas Tech University is one of several facilities supported in part by grants from the Research and Training Centers Division of the Social and Rehabilitation Service in HEW. The Center's major purpose is to initiate applied research which is aimed toward alleviating disability, reducing dependency, and formulating more effective rehabilitation service delivery systems. The Center also seeks ways to share its research findings with and participate in the training of mental retardation and vocational rehabilitation personnel in the states of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

During the 1972-1973 grant year, the Texas Tech Research and Training Center, under the direction of Dr. Gerard J. Bensberg, planned and conducted several conferences for representatives from the five states. This monograph, the second in a series, reports on papers from two of those conferences which revolve around a common theme—behavior modification. The monograph offers personnel involved in the rehabilitation of the retarded new information, theories, and research findings relevant to their work.

Special thanks go to Katherine Adams for her careful preparation of the manuscript for print.

INTRODUCTION: BEHAVIOR MODIFICATION IN THREE SETTINGS

Carol K. Sigelman

Behavior modification, because it has proved to be an effective means of changing behavior, is rapidly gaining the attention and respect of educators and rehabilitators. Several published anthologies have already suggested that the range of applications of behavior modification in human service fields is almost endless (e.g., Ullmann & Krasner, 1965; Thompson & Grabowski, 1972); the three papers collected here convey the same message. However, this collection has two special qualities. First, it is nontechnical and should provide educators and rehabilitators who have not used behavior modification with a basic understanding of key concepts and techniques, while at the same time suggesting new strategies and program refinements to those already using behavior modification. Secondly, the collection has special relevance to those who are concerned with teaching social and vocational skills to the retarded in institutions, special rehabilitation programs, and community-based group homes or halfway houses.

The first paper, "A Behavioral Approach to Teaching Social Skills to the Severely Handicapped," was presented at a March, 1973, conference entitled, "Achieving Social Competency with the Developmentally Disabled," sponsored by the Texas Tech Research and Training Center in Mental Retardation and the Dallas County Mental Health and Mental Retardation Center. Rather than describing a specific behavior modification program, Marion Panyan and Earl Patterson of the Lubbock State School explain basic concepts and treatment procedures, illustrating them richly with examples of successful behavior changes in individual residents of institutions for the retarded. They outline the basic steps in increasing an appropriate behavior and in decreasing an inappropriate behavior—from defining and measuring the behavior, to using procedures such as reinforcement, shaping, and time-out, to evaluating the effectiveness of the treatment. Their paper is the first in the collection because it should be read first, particularly by those unfamiliar with behavior modification.

Many of the strategies defined and illustrated by Panyan and Patterson are incorporated in the programs described in the next two papers—each of which describes a token economy, or organized program for teaching and rewarding behavior. The first, "Achievement Place: The Use of Token Economies in Small Group Homes," was distilled from a presentation by Elery L. Phillips at the "Social Competency" conference referred to above. Dr. Phillips, who carries an appointment with the University of Kansas, is not only a researcher but a knowing practitioner, for he and his wife are the teaching-parents at Achievement Place, which has gained national attention as a model rehabilitation program (e.g., Phillips, Phillips, Fixsen, & Wolf, 1973). Drs. Phillips, Fixsen, and Wolf describe a small community facility for pre-delinquent boys which was initiated by citizens seeking alternatives to institutionalization. Although it does not deal specifically with the retarded, the model fits any family-style treatment program and is, in fact, used in group homes for the retarded in Kansas. The authors emphasize the importance of going beyond a purely mechanical approach to token economies so that youths receive instruction, counseling, and genuine affection as well as tokens or points. They also suggest ways of extending treatment into the community—through

school notes, home notes, and continuous interaction with the youths' families—so that behavior changes initiated at Achievement Place do not stop there but transfer to other settings.

The final paper in the collection was presented at an R & T Center conference in December, 1972, entitled, "Vocational Evaluation and Pre-Vocational Training." Jerre W. Gist and Michael W. Welch, in "The Use of Behavior Modification in a Cooperative Special Education and Vocational Rehabilitation Program," describe still another application of behavior modification—this time, in a token economy designed to improve the academic and vocational skills of the educable retarded. Through the use of "job descriptions," students move in small steps toward successful completion of tasks and learn a variety of behaviors such as grooming, punctuality, and persistence which are essential in any work setting. The Open Token Economy at the Center for Developmental and Learning Disorders (University of Alabama in Birmingham) is an innovative approach to vocational evaluation and training which should be of special interest to vocational rehabilitators. However, because various behavior modification programs share a common core of principles, an educator in one field may find just what he needs in a program developed in another field. Strategies applied in one setting are usually easily tailored to fit another setting.

It might be useful at this point to comment on behavior modification from the point of view of an interested observer who, unlike the authors, is not a card-carrying behavior modifier. Those who use behavior modification are often passionately committed to it, and for good reason. To put it very simply, it works. It is one of the most clearly articulated and easily applied systems for changing behavior. It does not rely on clinical insight or complex understandings of human personality; yet it reflects basic understandings of how people operate by showing how changes in the environment—specifically, changes in the consequences which follow an act—change the ways in which people behave.

Of course, behavior modifiers have their own jargon, ponderous at times to the outsider. Hidden in the terminology, however, are some simple, common-sense notions about learning and teaching. One such notion is that, in order to teach effectively, we must know precisely what it is we are trying to accomplish—that is, what changes we hope to effect in the learner's behavior. Moreover, in order to evaluate the learner's progress and our effectiveness, we must know what the learner was like before we attempted to change him and what he is like after we have done our work. At the heart of behavior modification is this concern with specifying objectives and measuring behavior before and after intervention.

The teaching techniques used by behavior modifiers are also intuitively sound. The concept of "shaping" suggests that to teach effectively it helps to break down what is to be learned into small, manageable steps. The concept of "fading" suggests that if we want to effect long-term changes in behavior, we must take care to see that the learner has opportunities to transfer what he has learned to new problems and settings. And finally, the principle of "positive reinforcement" is part of everyday life. If a child misbehaves, it is often counterproductive to criticize, lecture, and punish, thereby giving him extra attention for misbehaving. It is often more effective to ignore such behavior when possible and to praise and encourage him for behaving appropriately. Such basic concepts can be used and, of course, have been used outside of full-scale "behavior modification" programs. A major contribution of behavior modification, however, is that it translates general

principles into specific techniques and indicates conditions under which these techniques will be most effective.

Perhaps because behavior modification is so specifically delineated and effective, it has a vast potential for being misused and abused. In the first place, those who are not well-versed in behavior modification occasionally forget that one must know the learner as well as the methods to be used in teaching him. A reinforcer for which one child might work diligently might be despised by another child. While some children must be led through a sequenced set of variations if their behavior is to transfer to other settings, many others are able to generalize behavior to new settings with much less help. It also seems very likely that some teaching techniques are more successful with certain kinds of people than with others. In short, the behavior modifier cannot simply open his bag of tricks in any new situation without knowing something about the learner he is dealing with—what is rewarding to that person and what techniques are most appropriate for facilitating change in his behavior.

Secondly, the behavior modifier must be aware of ethical issues which will almost inevitably be raised about his program. Any time one attempts to influence, control, or change another person, of course, ethical issues arise, but this is particularly true when the attempts are successful. Who decides what changes are to be made? What techniques can be used in achieving the chosen objective? Is it ethical to force institutionalized retarded children to earn the basics of life—food, bedding, access to other people, privacy, or recreation? Behavior modification consists of techniques for changing behavior; it has nothing whatsoever to say about what behaviors are to be changed and what techniques are most "humane." Either someone in an administrative position must make value choices before technicians launch treatment programs, or the behavior modifier himself must take on the responsibility of making his goals and techniques sensitive to the rights and desires of the learner and society. One way to deal with this problem is to involve the learner in the selection of goals, rewards, and techniques. Another way to ward off criticism is to make conscious public relations efforts, expressing in a nonjargonistic way what is to be accomplished and why.

Thirdly, there is a danger that objectives for a program will be chosen on the basis of expediency rather than on the basis of need. Undoubtedly, some behaviors are easier to measure and teach than others. In vocational training, for example, it may be easier to design a behavior modification program to teach, say, counting change than to teach budgeting and wise allocation of money. If the program designer stops when he runs out of easy skills to teach via behavior modification, it is likely that the program, while effective as far as it goes, will make only a small contribution to later success. One must work hard to structure a behavior modification program so that it deals with critical, and not simply peripheral, behaviors, attitudes, and knowledge. At times, it may be necessary to look outside the behavior modification repertoire for teaching methods.

Finally, there are potential problems in the area of staff training. Often large-scale programs are initiated without adequate preparation. It may not be enough to tell attendants, for example, what data to collect and what strategies to use in different situations. They should be aware of what principles are at work, why particular techniques must be carried out precisely, and how effectively the program is working. Otherwise, the people actually implementing the program may see it as little more than headaches and an inordinate amount of paper work; or

they may begin to deviate from prescribed methods when they see no reason for their use. They, like the learners, must be rewarded for their extra efforts.

The authors of the three papers in this collection are aware of these issues in the use of behavior modification, as their programs testify. Their efforts illustrate that while behavior modification rests on simple principles, it requires careful planning and creativity to design and operate a good program.

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A BEHAVIORAL APPROACH TO TEACHING SOCIAL SKILLS TO THE SEVERELY HANDICAPPED

Marion Panyan and Earl Patterson

As most of you are aware, within the past decade retarded children have made great strides in independent functioning. Children whose low test scores were previously a deterrent to eligibility for training programs have since mastered a variety of self-care and social skills. In one large state institution, Wheatridge in Colorado, where I worked for three years, we had a grant to train technician level personnel in behavior modification. Ninety percent of the severely and profoundly retarded children there mastered the skills within a few months. As for the ten percent who did not, the problem was due to teacher or program error rather than to student deficiencies. Similarly, in Manitoba, Canada, a psychologist has successfully placed six severely retarded girls in a sheltered living facility in the community, and the girls have acquired a variety of household skills and academic skills.

While there is no single person or factor responsible for these changes, if one contributing factor had to be emphasized, it would be behavior modification. Many of you are sophisticated in behavior modification, but for those of you who are not, we would like to give you a brief description of its background and then turn to measurement procedures, which are a crucial element in using it successfully.

INTRODUCTION

Behavior modification refers to the systematic application of learning principles to the area of human behavior. These principles were first synthesized by B. F. Skinner in his book, *Science and Human Behavior,* in 1953. His work represented a major departure from previous schools of psychology. Psychologist had been concerned with explaining behavior after it occurred, saying that a person did whatever he did because of his ego strength, self concept, or any of a number of mentalistic concepts. In fact, radical behaviorists deny the existence of such mental states, while less extreme behaviorists hold that such concepts are of limited usefulness because one cannot deal with them directly. Behaviorists look at the person and what he is doing. We see a gentleman sitting in his chair, looking at the front of the room; we do not attempt to infer that he is thinking about what is being said or that he is thinking about last night. We state only what we see.

The shift of emphasis within psychology from internal events to external events, for which Skinner was responsible, greatly improved many clinical applications of psychology. The first measurements and modifications of behavior were done in the laboratory with rats and pigeons. After the basic strategy was well-laid, principles derived from the laboratory were extended to applied settings and used in the training of retarded children, the education of the slow learner, the reeducation of the delinquent, the socialization of autistic children, and even in counseling people with personal or marital problems.

With respect to the retarded child, I feel that behavior modification is the long-awaited tool which will allow us to convert institutions from centers of care to schools for acquiring special skills. However, in order for these changes to occur, certain myths or misconceptions about the retarded must be laid to rest. In the first

place, it has traditionally been held that mental retardation is a symptom of some underlying cause–defective intellect or brain dysfunction, for example. The behaviorist looks at mental retardation as a form of behavior–a limited form, granted, but still a form of behavior. We say that there is not any such thing as a retarded child; there are only children living in retarded environments. In other words, it is the conditions we have arranged which help to establish and maintain what we call retarded behavior. It is not something innate or inherited.

A second misconception is that retarded children are basically different from normal children and that they cannot learn the skills which normal children learn. This myth is being eradicated with each new competency which retarded children have mastered. When they learn to do things for themselves, people cannot as easily say that they are basically different.

Since this myth is pervasive, I would like to give you an example from my experience in Kansas working with teachers of special education classes. A psychometrist with the school system had tested a girl named Ethel to determine whether she was educable or trainable. When he found out that I was going to tutor her he asked for my opinion as to what classification would be appropriate for her. Being a behaviorist, I did not care which label was attached to the girl and viewed labels as more a deterrent to training than a tool for prescribing a suitable program. Ethel was an eleven-year-old girl whose family had moved from city to city so often that no continuous academic training had been arranged for her. As a result of these circumstances, Ethel was unable to read. Her operant rate was literally zero. So we started with picture cards portraying a single object with the word written beneath it. We held the reinforcements–candy and cookies–down beside the word so that she would attend to the word rather than to the picture. After we had taught her to say a variety of words in the presence of the picture, we faded out the picture, covering up more and more of it until she could make the appropriate verbal response to the word itself. After teaching her to recognize the picture words and a few sight words, we started chaining words together. Instead of looking at a picture and saying *ball*, she was required to say, for example, *a ball*, and at a later stage to read longer phrases and finally sentences.

After we had worked with her for three months, the psychometrist came back to ask whether she was trainable or educable. I said, "I don't know but you are welcome to sit in and watch a session." After the session he asked in dismay, "Are you sure this is the same Ethel?" I emphasized that just as Ethel's reading deficit was attributable to inadventitious circumstances, so her improvement was due to special events in her environment. I further pointed out that Ethel was not exceptional and that anyone could learn through these techniques. I hoped to instill in him a healthy skepticism for labels and get him interested in the behavior itself.

MEASURING BEHAVIOR

The key to using behavior modification is to look closely at behavior and measure it. If the behavior is not recorded, it is difficult to determine what effect your program is having or what techniques should be used as a next step. The first requirement is to define the behavior of interest operationally so that you know what you are going to count and what you are not going to count. Suppose you have a child who screams. What you mean by screaming and what I mean by screaming may differ, so we might agree to count as screaming only noise picked up

by a tape recorder a certain number of feet away from the screamer. Exact specification of the target behavior makes it possible for procedures to be replicated in different settings. Some behaviors are difficult to operationalize, but the goal is to define behavior in terms of what the child is doing.

Once behavior is operationalized, the next step is to measure its occurrence before any treatment program is begun. We refer to this as collecting *baseline* data, and two major techniques are used. When we take a *frequency count*, we simply record the number of times a behavior occurs within a given time period. We use portable counters, some of which record numbers as high as 9,999. Because these counters can easily be broken when used on the cottages, an alternative is to put masking tape on one's arms and mark frequencies of behavior on the tape. This has the advantage of being inexpensive and indestructible. If the period of time during which behavior is recorded is not held constant every day—and often it is not—we convert the numbers to a standard measure of behavior rate, which is simply the number of occurrences of the behavior divided by the amount of time during which observations were made.

The frequency count method is appropriate when you are dealing with discrete behaviors, ones which have a definite starting and stopping point. However, the time sampling method is more suitable when you are measuring continuous, ongoing behaviors. For example, drooling poses a measurement problem: How do you tell when one drool ends and another begins? In the time sampling or interval recording method, we establish blocks of time lasting for 15 seconds, 30 seconds, or any other standard interval. In each block of time, the observer marks a plus if the behavior occurs during the interval and a minus if it does not occur. To convert this information to a meaningful measure, simply count the number of intervals in which the behavior occurred and divide this number by the number of intervals in which the behavior could have occurred (the number of intervals observed). This tells us the percentage of intervals during which the behavior was present. Time sampling has also been used to measure studying in the classroom. Several behaviors—attending to one's work, looking at the teacher, or reading out loud may be used as indicators of studying. By recording the number of intervals during which each student is studying, one can examine variations from day to day, or before and after a new program is initiated.

Once the information is collected, either in the form of a behavior rate or percentage of intervals, it is graphed or charted over time. A graph is a clear and easy way to communicate information to others. By inspecting the level of behavior as portrayed on a graph, one can easily determine if treatment strategies need to be revised or new ones devised.

From a scientific viewpoint, it is useful to know if changes are actually a result of the treatment program and not a result of chance, coincidence, or a practice effect. The first technique for assessing the function of the treatment variable is the reversal design, which involves stopping the treatment and seeing whether the behavior moves toward the level at which it was before the treatment was initiated. If we are rewarding studying behavior, for example, and then start to ignore it, we might observe a decline in studying behavior. After the check has been made and we are confident that the treatment was responsible for changing behavior, we reinstitute the treatment once again.

Of course, the reversal technique is not always possible or desirable. Once a child has acquired a behavior such as walking or reading, he will not revert back just because we stop giving reinforcements. These behaviors are irreversible once they are acquired. In other cases, it might not be in the best interest of the child to attempt to reverse the treatment. For example, when we succeed in eliminating self-injurious behavior, we leave well enough alone.

When dealing with behaviors not amenable to the reversal technique, there is an alternative way of checking the effectiveness of the treatment. This is the *multiple baseline* technique, which, as the name implies, means collecting more than one baseline. For example, multiple baselines can be collected if one is working with two or more children who share a similar behavior. At Wheatridge we had three girls who demonstrated stereotyped hand movements which precluded adaptive behavior (see Figure 1). Using a time sampling technique, fifteen minutes in the morning and fifteen minutes in the afternoon, we recorded baseline data. After data were collected for several sessions, the treatment was instituted for one of the girls while we continued to collect baseline data for the other two girls. After three treatment sessions for the first girl, treatment was begun with the second while baseline information was still being collected for the third. In short, the onset of treatment was staggered. If change in each girls' behavior occurred at the point when treatment was instituted, this was sufficient evidence to rule out the possibility that coincidence or an extraneous variable was responsible for the change.

Another variation of the multiple baseline technique involves working with more than one target behavior for the same child. Suppose you want to teach a child to button his shirt, zip his pants, and tie his shoelaces. Baseline information is collected for all three behaviors (let us assume that the child has no competency in these skills at the beginning). When you begin teaching him to button his shirt, you continue to periodically collect baseline data on the other behaviors to see if he is incidentally acquiring the zipping and shoe tying skills. After he has mastered or almost mastered buttoning, you can start teaching him zipping, and so on. If he acquires the skill at the point at which each program started, you may safely attribute his acquisition of the skill to the treatment or program itself. Typically practitioners simply collect baseline data and then graph treatment effects, but if you want to assess programs in a more scientific manner, either the reversal or multiple baseline technique may be helpful.

Now that we have discussed the measurement procedures which will be used before, during, and after treatment, it is time to turn our attention to the principles and procedures which may be selected for use during the treatment itself. When the retarded child is viewed behaviorally, we see two major differences between him and the normal child. First, the retarded child has a smaller repertoire of behaviors; that is, he does not do as many things as well, as quickly, and as efficiently as the normal child does. He learns, but he is slower to learn. Therefore, we seek to teach him new behaviors. Secondly, the retarded child may do many things, but he does not always do them at the right time or in the right place. In other words, he demonstrates inappropriate behavior, behavior which we would like to reduce or eliminate. We will deal first with procedures for increasing a behavior or developing a skill and then turn to procedures for decreasing a behavior.

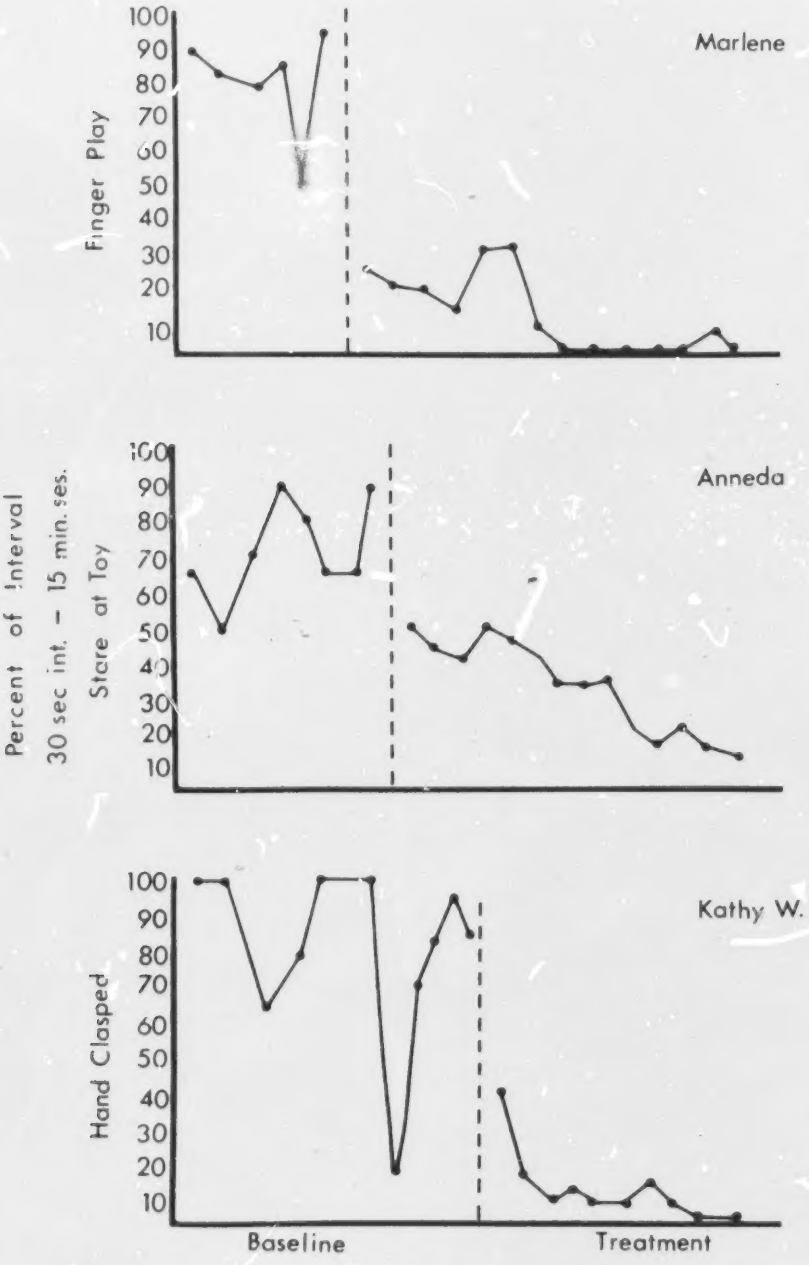

Figure 1. The Multiple Baseline Technique: Decreasing Stereotyped Movements

TREATMENT PROCEDURES FOR INCREASING A BEHAVIOR

We will discuss four major procedures for increasing a behavior, giving examples from our own experiences and from the professional literature, while emphasizing the theme of social skills.

Contingent Reinforcement

Reinforcement is defined as any stimulus event which when made contingent upon the occurrence of a given behavior increases the probability that the behavior will occur again. Any stimulus event which occurs in the environment and which is perceivable to the organism can be a potential reinforcer. In working with retarded children, four types of reinforcement are typically used. First, we use consumable reinforcements–the famous M&M, Fritoes, cola from a squirt bottle, or any food or liquid which can be dispensed in small, discrete units. Quite obviously, a steak dinner would make a poor choice since the child would become so full that working for more food would be aversive.

A second form of reinforcement is *social* reinforcement–saying, "Good!," or "That's great!" Often we combine edible and social reinforcement, handing an M&M and saying, "That's great, Billy!" In giving social praise, it is quite important to make it sound like sincere praise. Some trainers do not differentiate between the tone of voice they use in giving instructions and the tone they use in praising the child when he performs correctly. Although exaggerated enthusiasm often seems strange to us, it may be essential if the message is to have impact on the retarded child. Other social reinforcers are already available in the environment. One of our boys especially likes visiting a boy who lives in another dorm, so he works for the social reinforcement of being with his buddy. In addition, the Saturday night dance, movies, and other co-educational events serve as natural social reinforcers.

The third form of reinforcement is *physical* reinforcement, which usually means a pat, or a stroke, or perhaps a hug. The fourth type of reinforcement includes tangible items or activities. Access to a favorite toy for a child if made contingent upon his appropriate behavior, increases that behavior. One special type of tangible reinforcement is a token. Tokens acquire their reinforcing properties by being associated with already established reinforcers. Poker chips, stars, play money, marks on a paper, or brass coins are among the items which may serve as tokens. Tokens, like money, can purchase other reinforcers such as candy, toys, books, or field trips. A wide array of back-up reinforcers for which one can exchange tokens is critical if the tokens are to maintain their effectiveness.

The use of tokens has several advantages over other types of reinforcement. Tokens can be presented at any time and place and will be equally effective. Furthermore, since tokens can be exchanged for a variety of reinforcers, an item is almost always available that meets the child's current level of deprivation. An added benefit is that the handling of tokens teaches children to count, save, and spend "money." Token reinforcement can be used to develop new skills in less retarded children. Consumable reinforcers are most effective with those children who are nonverbal or lack the basic self-help skills.

Certain guidelines should be followed in using any form of reinforcement. Premack's Law, for example, emphasizes the effectiveness of consequating a low rate behavior with a high rate behavior. A high rate behavior, or a preferred activity such as playing outside, may be made contingent upon a low rate behavior, such as

practicing the piano. A child may attempt to set up the contingency in reverse (e.g., "If I can go outside for 30 minutes, I will play the piano when I come in."), but one would be unwise to believe him, unless the goal is to produce a young con artist. Of course reinforcers must be carefully chosen. If the child hates to play outside, he clearly will not play the piano or engage in other behaviors to earn the right to go out. What is reinforcing to one child may not be reinforcing to another. At the Lubbock State School, we recently worked on a conditioning program with nonambulatory children using a vibrating bed as a reinforcer. While some of the children pulled a manipulandum to make the bed vibrate, others apparently experienced vibration as aversive and worked to avoid it. So, if you are teaching a child to read using M&M's as reinforcers and find that his reading performance is decreasing, you know that you need to switch to a new reinforcer. One way to establish which events are reinforcing to each child is to keep detailed charts.

Another important factor in the success of any reinforcement is that it be contingent. We often see examples of "noncontingent" reinforcement, as when residents are taken to the canteen by attendants or brought treats from the canteen at a certain time of the day. Whether the child is behaving or misbehaving at canteen time, he receives the reinforcements. The attendants are performing a kindly service, but the potential is there for shaping very strange behaviors. Skinner holds that reinforcement should be immediate because the behavior being shaped is that behavior which occurs immediately preceding the delivery of the reinforcement. If you are not careful to reinforce desired behavior, things can go awry. Skinner has demonstrated this principle by putting pigeons in covered boxes and then delivering food pellets every fifteen seconds. After a period of time, he removed the covers on the boxes to find one pigeon hopping on one foot, another spinning around, and still another flapping his wings. He called these behaviors "superstitious" because the pigeons had ritualized whatever behavior they happened to have been doing when the pellet dropped. Like going to the canteen at a specified time each day, the delivery of pellets was on a fixed time schedule rather than being contingent upon desired responses.

One more example will serve to demonstrate the need for careful planning of reinforcement. Before NASA began sending men to the moon, they worked with "astromonks," monkeys trained to operate controls in studies of atmospheric conditions. One monkey named Bonnie was trained through behavior modification to press a lever when a light turned on. His performance was monitored at the control base and reinforced with banana pellets. One day Bonnie stopped performing. People at the control base could not understand what had happened and thought that perhaps Bonnie had taken sick or had some other mental or internal problem. What had actually happened is that a failure in the mechanism had resulted in Bonnie's receiving his entire week's supply of banana pellets that morning. He had satiated on banana pellets and would not continue to work. If you or I received our salary for the year today, would we continue to report for work, particularly at 8 o'clock?

Now for an example of reinforcement used appropriately and successfully. During a workshop in England this summer, there was a little girl named Jeannie who would not wear her glasses and could not see without them. During the baseline period, the amount of time during which she would keep her glasses on if they were placed on her was zero (see Figure 2). Many people would shrug, say she

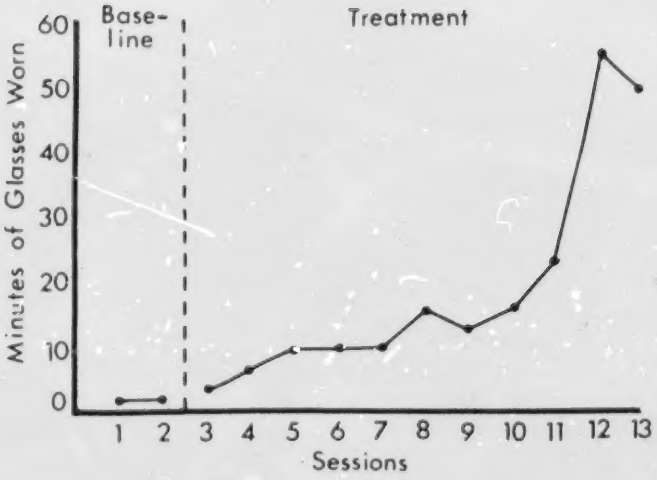

Figure 2. The Use of Reinforcement: Teaching a Girl to Wear Her Glasses

must have an aversion to glasses, and give up, but one particular trainer, Sheila Glenn, designed a training program instead. She started with empty frames and got Jeannie to put them on. Because Jeannie could not hear well, social praise did not appear to be a suitable reinforcer, so physical reinforcement (hugging and touching) was used and was very effective because Jeannie had been starved for attention and now received it—when she put her glasses on. Sugared cereal was also used (an edible reinforcer). In the beginning, the training took place in a special room where Jeannie played with toys, an activity which kept her from removing her glasses by keeping her hands busy. If she removed her glasses, the toys and glasses were taken away for five minutes and then presented again. In the first session, Jeannie kept her glasses on for seven minutes and kept them on longer and longer as the sessions continued. As performance improved, the conditions of training were changed. Instead of being seated at a table with toys, Jeannie was free to move around the training room. Later, half of the training time, and finally all of it, was spent at the dorm or outdoors. Also, Jeannie had to progress from wearing empty frames to wearing frames with clear glass to wearing her proper prescription. In this example, then, the training progressed through stages, making use of both physical and edible reinforcers, and minimizing the use of a less effective form of reinforcement, verbal or social praise. The example also demonstrates the importance of transferring training to the actual settings in which the child must operate, for behaviors are a consequence of the environment. It often is not enough to teach a behavior in the lab and assume that it will be carried back to the dorm, particularly with retarded children who do not generalize learning as well as normal children. Actually, the example of Jeannie foreshadows our next treatment procedure—shaping.

Shaping.

Shaping is defined as the differential reinforcement of successive approximations to some desired behavior in order to increase the probability of a response occurring that is seldom or never emitted. More simply, behavior is broken down into several small steps and training starts with the tiniest step toward a more complicated behavior. For example, if you want to teach a child to raise his hand, you might start by getting him to move his hand just a fraction of an inch and reinforcing that. The chances that the small movement will occur again are increased because you reinforced it. Gradually, you reinforce higher and higher hand movements until on command the child can raise his hand all the way. The word *differential* in the definition means that certain behaviors are reinforced while others are not—i.e., upward hand movements are reinforced while kicking legs, wiggling in the seat, and other behaviors are ignored. In such training, we might use *physical guidance* to speed the process. Instead of waiting for the child to move his hand, we might pick up his hand and move it for him, reinforcing only that at first, and gradually removing the prompt until he moves his hand by himself. Prosthetic devices such as the special spoons used in self-feeding classes are another option in the early stages of training. Modeling and demonstration—reinforcing another child who is able to perform the task in front of the trainee—may be used to elicit a first approximation to the desired skill. The key to shaping is to move gradually, breaking the behavior into small steps and reinforcing small increases until, starting with a finger twitch, you have shaped a complex motor skill.

A good example of shaping comes again from the Wheatridge State School, where a boy was taught to walk using the shaping technique (see Figure 3). When we started, the boy was placed in his walker for a great deal of the day but made no attempt to move to another section of the dorm. When he moved slightly in his walker, we reinforced him with spoonfuls of ice cream or whatever they had had for dessert that day. Next we taught him to pull up to a standing position in his walker. Once we got him standing up, the next step was to get him to walk with support, holding on to parallel bars. We reinforced first one step, then two steps, then three steps, and finally going the entire length of the bars—ten to twenty feet. In other words, we gradually extended the number of steps required to receive the reinforcement. Although we worked with him for only a month and stopped when he could walk along the parallel bars and back, the logical next step would have been to use crutches or portable supports of some kind. Such physical props are easier to fade out or remove than a person providing support. Unfortunately, many dayrooms do not have pieces of furniture which a child can pull up on and grasp for support; hence the physical design of facilities has an influence on skill learning. Although safety is a consideration, it should be possible to construct low rails around the room or tables with rounded corners, preventing injury while at the same time facilitating motor development.

Fading.

In the previous example, we alluded to another treatment procedure, fading. After a behavior has been shaped using prompts of one form or another, it is desirable to gradually remove these cues or supports and let natural stimulus components of the environment assume more control of the behavior. In working with the theory that behavior is controlled by the environment, we assume that when any stimulus has been paired with the behavior, it has been conditioned as a *cue* for the behavior to occur. A command to wash hands, for example, is a cue, but eventually you want the child to wash his hands when in the presence of soap and water, without needing to be told to do so and without needing someone to guide his hands.

We successfully trained one girl to wash her hands through the use of fading. The hand washing task was broken down into steps, but we could not get the girl to take the first step--approaching the soap and picking it up. We attempted to hold her hand and move it for her, but she resisted. She also resisted our candy and cookies, but finally someone noticed that she loved chewing gum and this became the reinforcer. We put wrappers from the chewing gum around the bar of soap. Luckily, she reached for it and was reinforced with a piece of gum. Since soap does not come in gum wrappers, we had to teach her to reach for the soap in the absence of the wrapper. Using the fading technique, we simply peeled off parts of the wrapper gradually until there was only a small strip left. Finally she reached for the unwrapped soap lying next to the gum, which we pulled back as she reached. In using such prompts, the idea is to make it almost impossible for the child to fail, but without making him dependent on the prompts forever. They are withdrawn as soon as the child shows that he is ready.

To give another example, we have taught some children to set a table by preparing a poster which has outlines where the plates, glasses, and silverware pieces are to be placed. When a child can successfully place the objects on the appropriate

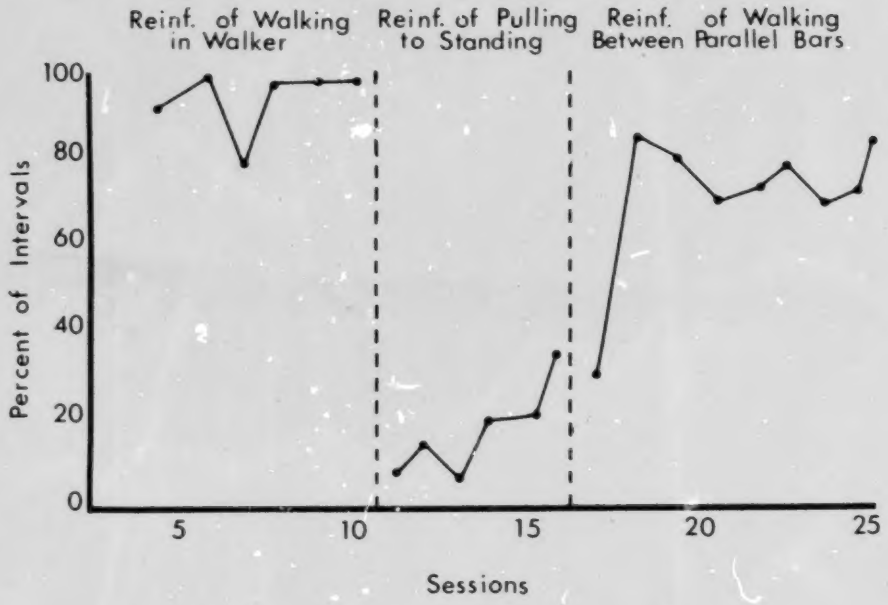

Figure 3. The Use of Shaping: Teaching a Boy to Walk

markings, the cues are faded by moving from solid lines to dotted lines and by eliminating dots until finally no cues remain. The ultimate goal is to work toward the point where the behavior is being reinforced by the natural environment, and the M&M's and programmed environment are no longer necessary.

Chaining.

Chaining is the last of the four methods of increasing a target behavior. In chaining, several separate responses are linked together in a logical sequence (e.g., take shirt off hanger, put shirt on, button shirt, tuck shirt in). Driving a car, setting the table, and cleaning up one's room are examples of chains of behavior. A chain is established by teaching and reinforcing the last step first. For example, you would first teach a boy to tuck his shirt in. After he had successfully accomplished this step, you could teach him to button his shirt. One response (buttoning) produces a stimulus change which controls the probability of the next response (tucking in) occurring. One response provides the cue for the following response. Each response, along with its corresponding set of cues, provides a link in a chain of behaviors that terminates in reinforcement. A chaining procedure is often utilized to teach domestic tasks such as bedmaking, mopping, and dishwashing. Each discrete unit is incrementally added to other already established behaviors in the sequence. Chaining is concerned with a complex set of behaviors, whereas shaping stresses the development of a single response.

Summary.

There are six basic steps used in increasing a target behavior: (1) define the behavior operationally; (2) measure the behavior prior to treatment (take a baseline rate); (3) implement the treatment procedures (select from contingent reinforcement, shaping, fading, and chaining strategies); (4) measure the behavior during treatment; (5) fade out any artificial reinforcers, replacing them with natural reinforcers available in the everyday environment; and (6) measure the behavior after treatment to determine if it has maintained its strength. A similar plan of attack is used to decrease a target behavior, the topic which we will now address.

DECREASING BEHAVIOR

We must often work with deviant or inappropriate behaviors which interfere with ongoing functioning. As was the case in increasing a target behavior, the first step in decreasing a behavior is to define the behavior operationally. Rather than saying that a child is aggressive, define aggressive behavior in terms of the number of hits or bites or whatever. Some behaviors are difficult to define. At the Lubbock State School, we worked to decrease fighting behavior. It was found that the definition of a fight could range from hitting or wrestling that resulted in a bloody nose to one boy's simply tapping another on the shoulder. We finally decided to define fighting broadly, including any physical contact between two boys, since many seemingly harmless contacts could lead to a bloody fight. Once the behavior is defined, it is then measured before treatment begins. Treatment itself may draw from four basic prodedures—extinction, time-out, differential reinforcement of other behaviors, and punishment.

Extinction.

If it is the case that reinforcement increases a behavior, then withdrawal of the reinforcement will eliminate the behavior. The basic premise of extinction sounds simpler than it is. First, one must identify what is reinforcing the behavior. It may be that one staff member's attention is reinforcing and can be withdrawn. Or if going outside to play is reinforcing a deviant behavior, the child can be kept inside.

Often, however, behavior is reinforced by a combination of factors, and we are not able to determine exactly what stimulus variable is at work in order to hold it back. Another drawback in using extinction is that when the reinforcer is withdrawn, the behavior tends to increase initially. For example, when someone tries to buy a pack of cigarettes and the machine does not work, he will furiously pull all the selections and bang the machine for a time. If a child receives attention when he bangs his head and that attention is withdrawn, he will bang his head more frequently until the behavior finally stops. This becomes a critical problem in working to eliminate self-abusive behavior, for you do not want to see any increase at all, even a temporary one.

We recently saw an example of extinction occurring naturally. A boy transferred to us was hitting himself at a very high rate, three or four hundred times an hour. To use punishment, we typically have to get parental consent. We considered using shock but could not reach the parents and were left helpless. After about a three-month period, however, he stopped hitting himself. Why? The transfer records from his previous institution included a notation that if someone gave him candy, he would stop hitting himself. In other words, the attendants at that institution had unwittingly reinforced him for hitting himself, and by doing nothing we withdrew the candy reinforcer and reduced the rate of hitting.

Time-out.

As we have suggested, extinction may be difficult to use when everyone involved with the child is not acting consistently and holding back reinforcement. When you cannot identify every event or person reinforcing the behavior, you may wish to remove the child from any source of reinforcement whatsoever. This is what is called time-out, time-out from reinforcement. Time-out may be administered in a separate part of the room or in a nearby room. When a child is taken to a time-out room or booth, there should be no accompanying remarks, no apologies for having sent him there. Such comments, which may represent more attention than he has received all day, may actually reinforce him and increase the unwanted behavior. Time-out must also be differentiated from techniques such as isolation or lock up, which involve long periods of time. Time-out should last for only three to five minutes to be most effective. Longer periods of time do not eliminate the behavior any quicker; in fact, they are less effective because they do not offer as many learning opportunities. This fact is difficult to convey to attendants, especially when the child is in and out of time-out very frequently during the early stages of treatment. However, if he is locked up for long periods of time, the child does not have the chance to emit the target behavior and experience the consequences repeatedly until he learns. We have given the attendants small timers to wear on their key chains. When the child is locked in the time-out room, the timer is set.

When it rings, the child is released unless he is still not quiet, in which case the timer is reset for one minute. This process is continued up to a maximum of twenty minutes.

After he is released, nothing is said to him—no lectures or reminders of why he was there. It is very possible that if you try to counsel a child being released, he will engage in the undesirable behavior again in order to receive more counseling time.

Here is an example of time-out used successfully. A little girl, Jackie, pulled the hair of other little girls so forcefully that she actually pulled out clumps of hair. Jackie carried a small plastic purse full of hair around with her and was called "The Scalper." Needless to say, no one wanted to be in the same room with her, so she got very little social reinforcement. The rate of hair pulls per hour was not very high, but because each occurrence was so painful, it seemed important to try to reduce the behavior. This became a dorm project with all the attendants participating in the treatment (see Figure 4). After seven days of baseline data were collected, what had been a cloak room was converted to a time-out room. I induced Jackie to pull my hair to demonstrate the method, and then the attendants took over. The first day, she had to be in the time-out room approximately eight times. The first time she was put there, she said, "I'm sorry, I didn't mean to do that," and quieted down by the end of the three-minute period. After several days of the time-out procedures, Jackie stopped pulling hair. At the same time, we reinforced her for any positive social interaction. Anytime she was next to someone or even in the same room with someone and was not pulling hair, she received social reinforcement.

The treatment had two interesting side effects. The girl had always collected bits of hair from the floor when the barber came to give haircuts, but after the program, she would not approach the barber at all. She also responded to me as an aversive stimulus because when I approached her later to give her social reinforcement, she backed up and cried, "No, no!" She did not react similarly to the attendants, for they gave positive reinforcement as well as time-out experiences.

Time-out can fail if it is not properly arranged. One boy named Jerry, who threw rocks through windows, was placed in a time-out booth in the corner of the dayroom. Unfortunately, the plywood construction had an open top, and Jerry's friends threw toys over the top to him. When the door was opened, we observed that he was playing with his t"s and did not come out. Rock throwing was eventually decreased by teaching Jerry to play basketball. In most cases, time-out is very easy to use and does not raise ethical issues.

Differential Reinforcement of Other Behaviors (DRO).

This procedure, which has been a component of some of our examples so far, involves reinforcing a positive behavior as a means of decreasing a negative behavior. As in Jerry's case, one reinforces a behavior which is incompatible with, or which cannot happen at the same time as, the deviant behavior. Another example would be to schedule a behavior such as hitting a ball or a Bozo clown for a child who hits himself. The alternative behavior does not have to make it impossible for the child to engage in the deviant behavior, but it is better if the two behaviors are incompatible.

One boy had a high rate of sneaking away from his cottage and hiding somewhere in the institution. He was living in a dorm with a token economy, but it

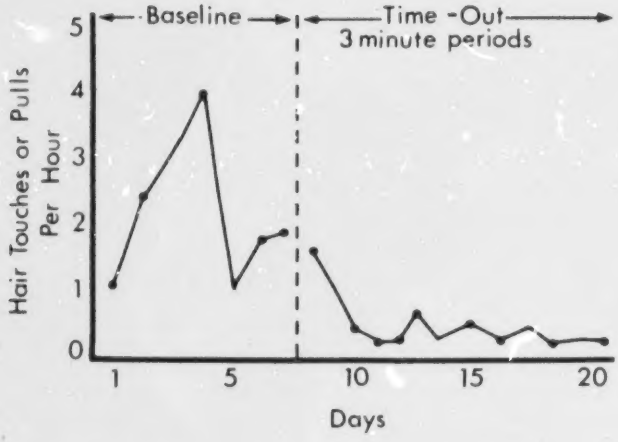

Figure 4. Time-Out: Decreasing Hair-Pulling Behavior

was impossible to reinforce desirable behaviors when he was missing. So we decided to pay him tokens when he was on the dorm; the attendants checked around the dorm at fixed time intervals and gave him tokens if he was there. The next step will be to thin out the schedule of reinforcement. Often differential reinforcement of other behaviors may be combined with punishment or another method of reducing the deviant behavior.

Still another example concerns a profoundly retarded boy approximately 12 years old who rocked continually (see Figure 5). An obstacle course consisting of a balance beam and stairs was set up. He was trained and reinforced for completing the obstacle course, but if any rocking occurred within a minute of the time, he did not receive his reinforcement. Walking on the balance beam was incompatible with rocking. We were able to reduce the rocking and get him involved in a whole variety of physical activities which he had never done before. Clearly, this technique is valuable when it can be used, for it decreases undesirable behaviors without the use of punishment.

Punishment.

The final technique for decreasing behaviors is also the most controversial of the four. A stimulus event presented after a behavior occurs which lowers the rate of the behavior is termed a punishing stimulus. As was the case with reinforcers, you cannot determine *a priori* that shock, noise, smoke or any other stimulus is a punisher; you must watch the behavior and see what happens. In other words, punishment, like reinforcement, is defined in terms of its observed effect on the ongoing behavior. The more immediate the punishment, the more effective it is. One of you, for example, mentioned that a helmet has been devised which administers immediate shock when a child bangs his head. This is ideal, for without the need for a programmer, the behavior itself brings on the punishment. It is also possible to make words or other stimuli *conditioned punishers* by pairing them with primary, unconditioned punishers. For example, the words, "stop that," can be paired with physical pain or shock so that at a later stage in training the words alone will suppress the behavior.

It is important to differentiate between punishment and negative reinforcement, two terms which are often confused. Punishment adds something, an aversive stimulus, to the environment and has the effect of decreasing a behavior. Negative reinforcement, on the other hand, is an aversive stimulus which the organism will work to avoid or escape, and its effect is to increase a desired behavior.

Punishment is used after other methods of treatment have not been able to correct the behavior. Punishment is used only for very severe behaviors such as those which endanger the physical well-being of oneself or another. Precautions are taken to insure that a professional person supervise or actually administer the aversive stimulus. Also, the person administering the aversive stimulus should experience the punishment himself. Of course, parental permission is obtained prior to using punishment procedures with children. These safeguards are not meant to discourage one from using punishment but rather to point out the requirements which must be met for the proper application of punishment.

When punishment is used properly it can eliminate many behaviors not affected by other techniques. The long-term benefits certainly outweigh the short-term penalties. Just as a shot may protect a child from disease for the rest of his life,

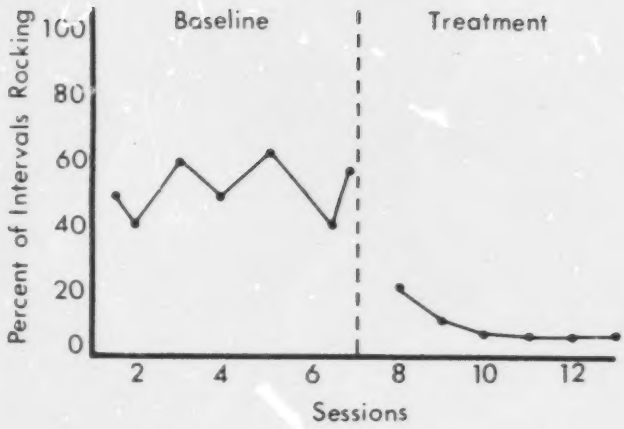

Figure 5. Differential Reinforcement of Other Behaviors: Decreasing Rocking Behavior

shock may protect a child from something like self-injureous behavior, even though both the shot and the shock may hurt temporarily.

An important point to remember about punishment is that it suppresses rather than eliminates behavior. When the aversive stimulus is removed, the behavior rate rises again. When punishment is used, it is important to follow up the original treatment. It is not enough to reduce the behavior in the laboratory; chances are it will climb back to a high rate when the child is returned to the cottage. Conditioned punishers are helpful in that prohibitive words can continue to suppress behavior after the original punisher is removed, but sometimes it is necessary to give a "booster," another dose of punishment after a period of time. The fact that punishment suppresses but does not completely eliminate behavior in all settings is certainly a limitation of the procedure.

There are also some undesirable side effects of punishment which make one consider other alternative treatment modes before using it. First, the people doing the punishing may become aversive to the child. If this occurs, they will be less likely to serve as reinforcing agents in the future. Secondly, sometimes appropriate responses are accidently punished because they are similar in topography to the target behavior. Care must be taken to insure that the response you wish to punish is the one actually punished.

An anecdote will clarify this pitfall. Two boys, Joe and Carl, had a very high rate of cussing behavior, which was worse in public places than it was at home. Their parents were told by a behavioral psychologist to punish the boys when they swore, to hit them immediately. The parents, who had never used this form of control, were ready to begin the next morning, unbeknownst to the boys. The mother asked Carl what he wanted for breakfast, and Carl replied, "Damn it, I think I'll have some bacon and eggs," after which he received a mighty slap. When the mother asked Joe what he wanted for breakfast, he replied, "Damn it, I don't know, but it's not going to be bacon and eggs!"

We have recently completed a treatment in which punishment was used quite successfully with a boy who smeared his fecal matter. He typically wore a restraining device to prevent the smearing behavior, but attendants on our task force began working with him while he was normally clothed in an observation room. We defined the critical behavior, reaching, as moving his hands behind his back and into his pants. During a mercifully brief baseline period, he reached fifteen times during a ten-minute session. A woman who had worked with him before and who was somewhat of an aversive stimulus to him succeeded in reducing the behavior, but only while she was in the room. He continued to smear elsewhere. By watching him through a one-way mirror, we were able to place his hands in a bucket of ice water immediately after he reached his hands behind him. For thirty seconds, his hands were held in the water and nothing was said except, "No, Billy." The ice treatment suppressed the behavior in that room, but then we used the reversal technique to evaluate the treatment. At first, nothing happened but when he reached back and felt no painful consequences, the rate increased immediately to almost the level it had been during the baseline period. Treatment was reinstated, but back on his home dorm the attendants reported he still engaged in the smearing behavior whenever he was not wearing the restraining suit. Next, we had the attendants observe and report the behavior and use the ice treatment when it occurred, and as a result the behavior has been almost eliminated. We have attempted to combine punishment with differential reinforcement of alternative

behaviors, such as constructive uses of his hands. While the treatment was only recently completed, it seems to have been effective. The example, however, illustrates one of the limitations of punishment, the fact that often when the punisher is removed the behavior increases rapidly from a low rate to a very high rate. The only solution seems to be to reinstate the punishment. Unfortunately, because punishment is a controversial method, not many research projects are funded to examine its effects and develop ways to maintain low behavior rates after punishment is stopped.

Summary.

As was the case with procedures for increasing a behavior, six steps are used in decreasing a behavior. First, the behavior is defined in objective terms. Second, the behavior is measured before treatment is begun. Third, a treatment procedure or a combination of procedures—extinction, time-out, differential reinforcement of other behaviors, and punishment—is implemented. Fourth, the behavior is measured during treatment. Fifth, an adaptive alternative behavior is developed, until the point is reached when the target behavior occurs no more often than it does for most people. In other words, the behavior is at least reduced in frequency, though it may not always be eliminated completely. And finally, the target behavior is measured after treatment to assess the long-range benefits of the program.

CONCLUSION

Institutions are incorporating behavior modification techniques into their daily routine at a rate unparalleled in the history of any new movement. While the gains are small in some instances, there is now a training tool available to use with those children who previously were thought to be untrainable. Achievements are likely to be cumulative and proportional to the patience and skill of the therapist. Therefore attendant–therapists not only need to be trained for their new role, but incentive systems need to be designed to maintain attendant training performance. The professional's task then becomes one of preparing attendants to become trainers and of devising teaching strategies to insure success. With the new teaching procedures, we can teach self-care competencies to those who before were cared for but not trained; we can establish vocalizations where before there was no speech; and we can develop vocational skills where before these same chores were done for the child. These achievements are not vague hopes for the future but actual performances of today. These advancements, witnessed in institutions across the country and abroad, are attributable to behavior modification methodology. Behavior modifiers are using an emerging and expanding set of procedures to cope with a variety of concerns, only one of which has been the focus of this paper: teaching social skills to the severely handicapped.

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ACHIEVEMENT PLACE: THE TEACHING-FAMILY MODEL IN SMALL GROUP HOMES

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I will be speaking today about a model for community-based, family-style, behavior modification programs. My wife, Elaine, and I are, and have been for seven years, teaching-parents in Achievement Place, a home for delinquent boys in Lawrence, Kansas. Other homes applying the same model treat delinquent girls, retarded children, emotionally disturbed children, young adults, and children with other learning difficulties. Although certain modifications might need to be made to tailor the program to a specific group, we find that the general strategies are applicable and effective in a variety of situations.

DEVELOPMENT OF THE MODEL

Achievement Place was established several years ago by the local community at a time when alternatives were being sought to the placement of juvenile delinquents in large reformatories. A group of citizens headed by the local juvenile judge realized that their only alternatives were institutionalization or probation. Neither option was notably effective. It was suggested at first that foster homes might be the answer, but existing foster homes were not willing to accept delinquents. Finally, a community board of directors was encouraged to consider developing a group home with a live-in married couple. After my wife and I were selected we began a furious search for help. We found this help largely through Montrose Wolf and Dean Fixsen at the University of Kansas. With Mont and Dean's help we developed a token economy for modifying the deviant behavior of delinquent youths.

Community-Based

Achievement Place accepts youths adjudicated by the local juvenile court and placed in the custody of the county Department of Social Welfare. In the court's opinion, the boys, while not yet serious criminal offenders, are in danger of becoming habitual law breakers unless corrective action is taken.

One significant feature of Achievement Place is that it is community-based and community-controlled. The impetus for the program, as well as initial funds, came from community members and agenices. The program is community-controlled in the sense that a board of directors makes decisions as to the goals of the program. It is community-based in the sense that the boys never have to leave their community to be treated. As a result, they are not severed from the kinds of reinforcers available in the community and they are prepared for a smooth transition back to their natural homes.

Family-Style

Achievement Place is also family-styled. It is a home like any other house in Lawrence, although perhaps larger than most. My wife and I and our two children

live in the home with the boys and participate with them in the kinds of activities characteristic of normal family life. We have all the problems which most families have—paying bills, getting to bed on time, finding lost socks. The difference stems from the fact that we seek to systematically teach boys social skills, academic skills, vocational skills, self-help skills, and family living skills.

Population Characteristics

Achievement Place usually has seven or eight youths ranging in age from 10 to 16. Although we are not permitted to accept boys 16 years of age or over, we can keep boys beyond their sixteenth birthday. Typically, boys stay in the home for approximately a year; however, after they leave they return to visit for occasional dinners, overnight stays, or counseling sessions. Most of the boys have had perhaps three or four brushes with the court in the year before they enter Achievement Place for such minor offenses as thefts, fighting, and "general disruptive behavior," and they carry histories of failure and truancy in school.

The Achievement Place System

When a new boy arrives, he is met by the boys, toured through the house, and introduced to our motivation system. We use a token economy, which the boys call a point system, as a method of modifying behavior. This means that we have taken some of the privileges available in the house and broken them down into small parts, making the parts available as the boys demonstrate desired changes in behavior. The system may be summarized quite simply: "If you do this for me, I will do that for you." Boys carry point cards in their pockets, listing points earned on one side and some of the available privileges and their associated "costs" on the back. The privileges offered include such common activities as using the telephone, watching television, using the workshop and its tools, eating snacks, going to town, and perhaps just gaining the privacy of their own rooms.

However, it would be important to note that only 1% of the interactions have to do with points. In addition, most point interactions involve a lot of praise. Our strategy does not stop at saying, "Okay, you did it, and you receive 300 points." It is more like this: "Hey, that's really very good. I haven't seen you do that before, and I'm very proud of you. You get 300 points, and I hope you can do it again."

Typical Day

Our typical day begins at about 6:30 a.m. The boys shower, dress and clean their bedrooms and bathrooms. Usually one of the boys helps Elaine prepare breakfast. After breakfast, they perform chores before going to school. All of the boys attend public school. Inside the classroom, the boys are expected to behave like other students, but after class each one takes what we call a school note to the teacher in order to be rated on the quality of his performance for the day. Many of our boys were (before coming to Achievement Place) considered disruptive in class and were labelled hyperactive, emotionally disturbed, or even mildly retarded because of their resistance to learn. Our efforts have been directed toward eliminating undesirable or stigmatized behaviors in the hope of making the labels disappear. A school note is tailored to the individual and asks the teacher questions about the youth's behavior in class. After school, the boys' school notes are checked by the

teaching-parents at Achievement Place and if their performance has been adequate, they retain their privileges for the rest of the day.

When the youths get home from school and have had an afternoon snack, some of them must work on homework, particularly if they are behind in academic work. Others need to work on social skills such as greeting people. For example, if a boy hangs his head and looks away when meeting someone, he is likely to inherit a label as "antisocial" or "rude" because he does not demonstrate certain skills. Such boys learn and practice eye contact, hand shakes, voice level, and common phrases to use in introductions. Boys who have earned their privileges and do not need special work are free to use the afternoon as they wish, going outside or to town, for example. Still others may have to make up points lost at school by doing tasks around the house.

When dinner time nears, the boys help prepare the meal; after dinner, they become part of a very important feature of the program, the family conference, which is a self-government system built into Achievement Place. Boys who have lost a large number of points during the day have the opportunity to bring the matter up and complain. They are not expected to complain at the moment they lose points, as they know that they will be able to appeal their cases at the family conference. All of the boys vote to decide whether the point fine was fair or not. The family conference is also the time when boys may vote to change rules or to make decisions about very serious problems which have arisen during the day. Finally, the boys elect a *peer manager,* the person responsible for seeing that certain maintenance tasks are completed.

After the family conference, the boys are again free to play outdoors, watch television, read, listen to the stereo, and so on, until about 9:30 or so. After evening snacks, they figure up their daily point totals and turn their cards in to a *peer bookkeeper,* who totals the cards and informs each boy of his privileges. These cards are later checked over by the teaching-parents.

Professional Teaching-Parents

The teaching-parents are the nucleus of the treatment program in the Achievement Place model. They have day-to-day, round-the-clock responsibility for the care, custody, and treatment of the youths in their program. They are far more than point givers; they are teachers of a broad curriculum of social, academic, self-help, prevocational, and family living behaviors. Teaching-parents are also counselors. To many of our boys, adults are not reinforcing. Hence, one of our basic tasks is to make adult attention a positive experience which affects behavior. Often, we counsel with an individual who has a special problem. We hope to help the boy arrive at a solution, but when the problem seems unsolvable, we may help simply by listening and sympathizing. At other times we do group counseling, as when there is a need for sex education.

Family Therapy

Still another cluster of responsibilities assigned to teaching-parents, in conjunction with the board of directors, involves maintaining good relations with the community, the juvenile court, the welfare department, and the youths' parents. We place special emphasis on working with the youths' parents since the goal is to return the boys to their natural homes. We teach parents to use the school

note and apply the principles which we use at Achievement Place. Earlier in our history, we attempted to train the youths' parents in the principles of behavior modification, but we found that many parents did not come to classes, or came intoxicated, or could not read. We have shifted to something resembling a doctor-patient relationship in which parents are urged to call when a problem arises and we suggest a plan of action. We have discovered and emphasized to parents that the key to remaining in the natural home is monitoring. The parents must be able to keep up with the boy, knowing where he is and what he is doing. Before the boys leave Achievement Place permanently, we have met with the parents at least once a week for almost a year. For example, before a boy goes home for the weekend, we sit down with the parents to discuss any special problems and strategies for dealing with them. Although we have no control over the parents, we try to convince them that our suggestions may make the home more enjoyable and insure that their son can remain with them.

Teaching-Parent Training

Let me stress once more that the primary responsibility of the teaching-parents is to teach new skills and reduce or eliminate behavior problems. The teaching responsibility includes evaluating procedures and seeking out new procedures when the original methods fail. Behavior modification is simply a readily applied and effective teaching method with a built-in means of evaluating progress.

Because we place total responsibility for the program with the teaching-parents, we are very concerned with selection and training procedures. We look for couples, usually younger couples, and require that either husband or wife have a bachelor's degree. Applicants are interviewed by the board of directors rather than by us, but after they are hired, we ask them to go through our training program. When we began training a few years ago, we held thirty hours of regular class sessions with some practical training. That strategy was a disaster, for although we tried to teach them everything we knew, they didn't pay attention. It was only after they were out in a home with a group of boys that they called to ask, "What was that you said?"

We have shifted to a year-long, sequenced approach to training, beginning with a one-week course in survival skills. The basic introduction is followed by a three-month practice period, during which we consult with the new teaching-parents frequently about how they are handling daily incidents. At the end of the three months, they are evaluated, they return for another week of workshop training, and then they go back to the field for another practice period. This pattern continues for approximately a year and concludes with a final evaluation which consists of systematic questionnaire feedback from the boys, their parents, the school, the welfare department, the juvenile court, the board of directors, and certified teaching-parents. If the evaluation is acceptable, the couple is certified as teaching-parents. However, since the State licenses homes and the board of directors hires and fires teaching-parents, our evaluation procedures cannot put someone out of business; all we can say is that a particular home is not one of the teaching-parent model homes and that we are not responsible for it. We have compiled the material which we use in training teaching-parents in *The Teaching-Family Handbook,* which is available through the University of Kansas (Phillips, Phillips, Fixsen, and Wolf, 1972).

THE MOTIVATION SYSTEM

The motivation system at Achievement Place is designed to provide a maximum amount of feedback to a youth when he first enters the program. Then, as the youth's skills and self-control develop, the structured elements of the program are faded out and replaced by a more natural set of feedback conditions. The motivation system has three major components: the point system, the social reinforcement system, and the self-government system.

The Point System

The Point System begins so that target behaviors are followed *immediately* by positive or negative consequences. In order to achieve this, a token reinforcement procedure is applied. A token which can be immediately and rapidly administered is used to bridge the delay between the occurrence of some behavior and a less easily manipulated but more important future consequence. At Achievement Place, tokens take the form of points. The youths are given points for appropriate behavior and have points taken away for inappropriate behavior. Thus, the points can be *earned* (as rewards) or *lost* (as fines) immediately. Points can be used later by the youths to purchase various *privileges* which the youths have demonstrated they will work for. Within several weeks the youths can earn their way from the Point System to the less structured Merit System, in which they receive all of their privileges free. Under the Merit System the youths continue to be responsible for all of the same behaviors that used to earn or lose points. The youths can be returned to the Point System if they fail to maintain their appropriate behavior while on the Merit System.

Since the use of punishment, even very mild forms of punishment, in treatment programs for youths is somewhat controversial, some comment needs to be made about the use of fines for modifying inappropriate behavior in the teaching-family point system. When any token economy is developed, the goal is to establish or modify certain target behaviors with the consequences that are available. Although this goal is common to all token economies, the arrangement of the economy itself can vary across at least two important dimensions: the *sign* and the *flexibility* of the economy.

In regard to *sign*, an economy can be completely *positive;* that is, tokens can be given for certain specified behaviors, but no tokens are taken away once they are earned. On the other hand, an economy can be all *negative*, where, for example, each youth begins each day with a full complement of tokens and loses them for certain behavior, but cannot earn tokens. A third possibility is an economy where tokens can be both earned and lost—a *positive and negative* economy.

A second important dimension is the *flexibility* of the token economy. Flexibility concerns the relationship between the opportunities for earning tokens and the number of tokens needed to acquire privileges. Many token economies are inflexible in that there are limited numbers of tokens available for specified behaviors each day and equal numbers of tokens are required to purchase the privileges. In a limited economy there is no way to make up unearned tokens. In a limited economy, therefore, it is somewhat arbitrary whether the sign of the economy is described as positive or negative. Failure to earn 100 tokens in a limited positive economy would be equal to losing 100 tokens in a limited negative economy since each would result in the loss of some privilege. Thus, while a limited

token economy may be formally described as a positive economy, it still could have an aversive quality since there would be no way of earning back unearned tokens or lost privileges.

It is also possible to construct a flexible economy where there are nearly unlimited opportunities to earn as well as to lose tokens for target behaviors. In an *unlimited* economy, tokens that were unearned or lost could be made up in a variety of ways. Thus, the loss of tokens would not necessarily mean that privileges are lost, but only that additional effort would have to be made in order to earn tokens to buy the privileges.

In the teaching-family token economy, points can be earned and lost. Hence, it is a *positive and negative* economy. While a set number of points are required to earn the privileges, there are a great many opportunities for earning points and, therefore, it is always possible to earn more points than are required each day. Thus, it is also a *flexible* economy.

There are several advantages to the teaching-family system. First, certain appropriate behaviors that initially have low baseline rates can be strengthened using only positive points (no points are lost). Second, certain inappropriate behaviors that have an initially high baseline rate can be eliminated by using only fines. Third, positive and negative consequences can be used jointly—that is, points can either be made or lost depending upon the level of the behavior—for certain behaviors that are critical to the overall treatment program or to the operation of the home. The fourth advantage is that points can be earned in a variety of ways and point losses can be made up. In a flexible system such as this, point losses do not necessarily mean that the privileges are lost. Rather, point losses mean that the youth must engage in appropriate behaviors in order to recoup the lost points so that all the privileges can be acquired. This is, in fact, what the youths generally do. In a recent 13-week period, only one of the seven boys at Achievement Place failed to earn a sufficient number of points to buy all of the privileges. That means that approximately 98% of the time all boys have their privileges.

While the effectiveness of the teaching-family token economy depends partially on mild punishment through contingent loss of points, the flexibility in the economy means that, in reality, the boys seldom suffer the loss of their privileges. On the other hand, one can conceive of a more limited token economy which is based entirely on "positive reinforcement" but in which the participants would frequently fail to earn all the back-up reinforcers. Thus, the aversiveness of a token economy would seem to be better measured by the degree of success that the participants have in earning the back-up reinforcers than by the presence or absence of contingent fines. Furthermore, the use of point fines is definitely advantageous because it offers the opportunity to develop a very important social behavior. One of the most important goals in the social skill curriculum of the teaching-family program is to teach these youths *how to react appropriately to criticism.* Inappropriate, aggressive, defiant, and belligerent behavior in response to criticism has frequently been reported by parents, teachers, and employers. The fining of inappropriate behavior provides an excellent opportunity to observe and to teach appropriate responses to criticism and negative feedback. Treatment programs which avoid the use of mild punishment and negative feedback because such criticism tends to "send the youths off" may be neglecting to teach their youths this extremely important social skill.

While a fine system can serve an important role, there is no doubt that the use of token systems involving fines by inexperienced or untrained personnel should be discouraged. Untrained personnel have been observed to rely solely on the great power of the token economy to modify unwanted behavior, neglecting their essential teaching function. This can make a program suppressive rather than educational. Conversely, teaching-parents who are experienced and trained in *all* the teaching-family procedures, and not simply in the token economy, can make sensitive use of instructions, prompts, and opportunities to guide, counsel, and schedule consequences for approximations to appropriate behavior. In the hands of skillful teaching-parents, the fine system is simply an important tool that is needed to help make their teaching effective. It is this teaching function that is the heart of the teaching-family program.

Social Reinforcement

A second very important component of the Achievement Place program is the social reinforcement system, which involves the praise, encouragement, attention, criticism, and affection that is given to the youths by the teaching-parents. Although the token economy is very important in producing behavioral improvements, it is only one aspect of a larger program designed to improve the youths' appropriate behavior and to discourage their inappropriate behavior. In addition to occasionally giving or taking away points, the teaching-parents must *continually* provide social feedback to the youths. The teaching-parents must give compliments; they must present criticism in a non-aversive, non-emotional, non-punitive way; they must constantly interact with the youths by teaching, demonstrating and helping the youths practice appropriate skills; and, most importantly, they must develop genuine affectionate behavior toward each of the youths. Teaching-parents must do all of these things, along with using the token system properly, to have a successful program.

The point system is but one component of the treatment program and, although it is important, it should be used only in conjunction with extensive social reinforcement by the teaching-parents.

Self-Government

The third essential component of the Achievement Place motivation system is the self-government system, which allows the youths to determine many of the rules and consequences for each other in a constructive, rational, and democratic manner. This is essentially a peer reinforcement and peer teaching procedure.

Generalization and Fading

We have learned a very simple lesson about using a point system: generalization of skills to new settings does not occur automatically; you must arrange for it. The fact that a point system works beautifully in the group home does not mean that boys will behave well in school, at home, and elsewhere. We try to insure generalization of learning in two ways.

First, we use school notes carried by each boy to his teacher, filled out, and returned at the end of the day. Each school note is tailored to the individual and

might, for example, ask questions about whether a boy made aggressive statements in class and, if so, how many. If the school note is good, the boy receives points at Achievement Place; if it is bad, he loses points.

The school system was so impressed by the effectiveness of our school notes that they printed up thousands of their own and sent them home with students. There are thousands of these notes floating around the streets of Lawrence. What the school system did not seem to appreciate is that success has nothing to do with the notes themselves; it has to do with the consequences which are delivered when the student returns home.

School notes have been most effective in eliminating major discipline problems in the classroom. They may not dramatically increase studying behavior, but they do decrease disruptive behavior in the class, and this is certainly a major step toward survival in the school system. Since filling a note takes only seconds and since changes in behavior have been felt in the classroom, most teachers are very cooperative.

Along with the school note, we use a home note taken by the youth to his parents when he goes home for weekends. Not only do we ask the parents to evaluate the youth, but we ask the youth to evaluate his parents. Thus, through the use of school notes and home notes, we try to insure that the consequences for behavior in effect at Achievement Place are also operative in other settings. However, the ultimate goal is not to make a point system permeate the life of each boy but to use the point system as a crutch to aid in eliminating problems and teaching new behaviors. The point system makes boys dependent on points; it would not work if this were not the case. Like any other prosthetic device, however, it must gradually be removed. Hence, our objective, achieved through fading techniques, is to lead a boy from dependence upon a structured token economy to dependence on the things which you and I are dependent upon—social reinforcers, money, attention, and other people.

EVALUATION OF ACHIEVEMENT PLACE

Our preliminary evaluation data includes measures of recidivism, police and court contacts, grades and attendance at school, and school dropouts. We have taken these measures for 16 youths who were committed to Achievement Place, for 15 youths who were committed to the Kansas Boys School (an institution for about 250 delinquent boys), and for 13 youths placed on formal probation. All 44 youths had been released from treatment for at least one year at the time we collected these data and all had been originally adjudicated by the Douglas County Juvenile Court (Lawrence, Kansas). All of the youths were potential candidates for Achievement Place when they were adjudicated.

The boys were *not* randomly assigned to each group. Rather, they were committed to each treatment by the local juvenile court for reasons that we cannot specify. Therefore, any differences among the three groups can be attributed to initial differences among the boys committed to each group or to the effects of each treatment. That is, the differences among the groups may be due to a "population effect" or to a "treatment effect."

Figure 1 shows the average number of police and court contacts for the three groups before, during, and after their respective treatments. As shown in this figure, the Achievement Place youths and Boys School youths each had about four

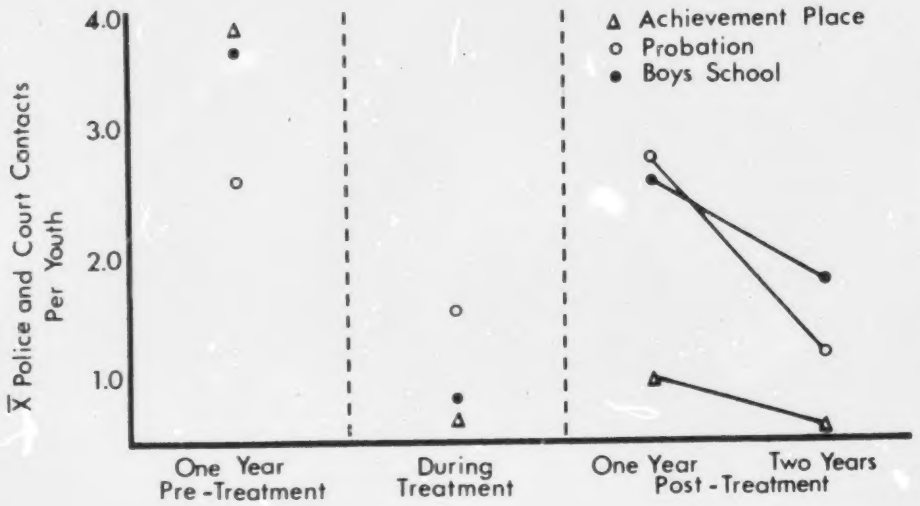

Figure 1. Police and Court Contacts Over Time

contacts with the police and court during the year preceding their formal adjudication, while the Probation youths averaged about two-and-a-half contacts. During treatment the Probation youths averaged over one police and court contact, while the Achievement Place youths and Boys School youths each averaged about one-half contact during treatment. During the first year after treatment, the Probation youths and Boys School youths averaged about two-and-a-half contacts with the police and court; this decreased to about one-and-a-half contacts during the second year after treatment ended. The Achievement Place youths averaged about one-half contact with the police and court during their first year after treatment, and this decreased to zero contacts during the second year.

These data indicate that the Achievement Place youths and Boys School youths were similar before and during treatment but were very dissimilar after treatment. The Boys School youths once again returned to a fairly high number of police and court contacts, while the Achievement Place youths maintained a low number of contacts with the police and court.

Figure 2 shows the percentage of boys in each group who received treatment after their release. These percentages are based on the number of youths in each group who committed some delinquent act after their release that resulted in their being readjudicated by the court and placed in the Boys School, a state mental hospital, or a jail, or sent to adult court for prosecution. As shown in this graph, 6% of the Achievement Place youths, 13% of the Boys School youths, and 31% of the Probation youths were readjudicated during the first 12 months after their release. By the end of 24 months after their release, a cumulative total of 19% of the Achievement Place youths, 53% of the Boys School youths, and 54% of the Probation youths had been readjudicated. Thus, it appears that the large number of police and court contacts experienced by the Boys School and Probation youths resulted in a larger recidivism percentage for these two groups. The Achievement Place youths had a smaller number of police and court contacts and a smaller recidivism percentage.

Although these police and court data reveal substantial differences among the groups, they are measures of failure, not of success. It is difficult to argue that lack of failure mean success since there are many reasons unrelated to a youth's behavior which may influence whether he is readjudicated or not. For this reason we also took three measures of school behavior. Figure 3 shows the percent of non-adjudicated youths in school before, during, and after treatment for each group. For two semesters before treatment, about 75% of the youths in each group attended public school at least 45 days during each 90-day semester. During treatment 100% of the Achievement Place youths, 100% of the Boys School youths, and 84% of the Probation youths attended school each semester. During treatment the Achievement Place youths and the Probation youths attended the public school in Lawrence, while the Boys School youths attended the school provided in the institution. During the first semester after their release 84% of the Achievement Place youths, 58% of the Boys School youths, and 69% of the Probation youths attended public school. By the third semester after treatment, 90% of the Achievement Place youths still attended public school, while only 9% of the Boys School youths and only 37% of the Probation youths were still in school.

Figure 4 shows the average number of days absent and the average grades each semester for those youths in each group who attended school. As shown in the top graph, the Boys School youths averaged about 20 days absent during each 90-day

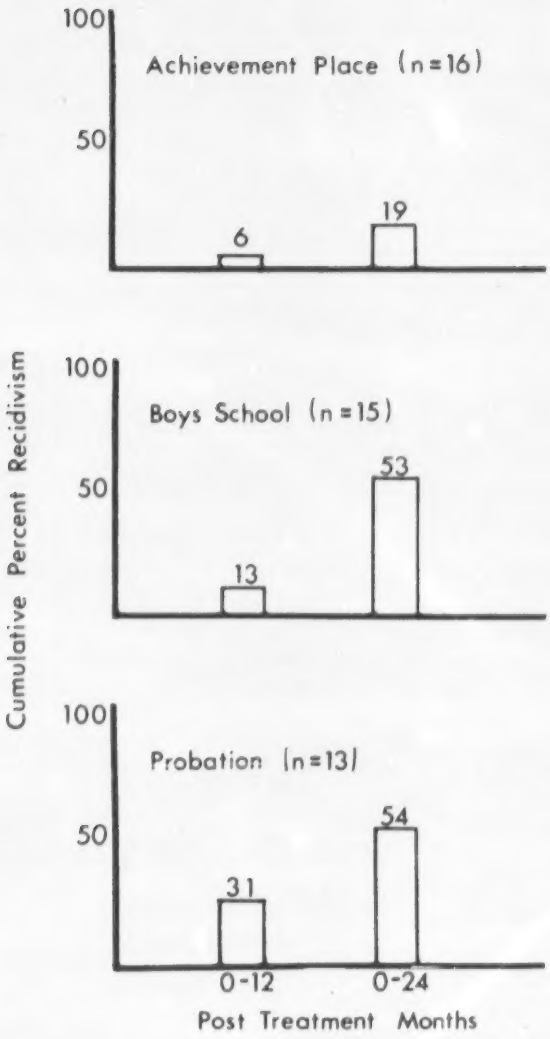

Figure 2. Recidivism Rates After Treatment

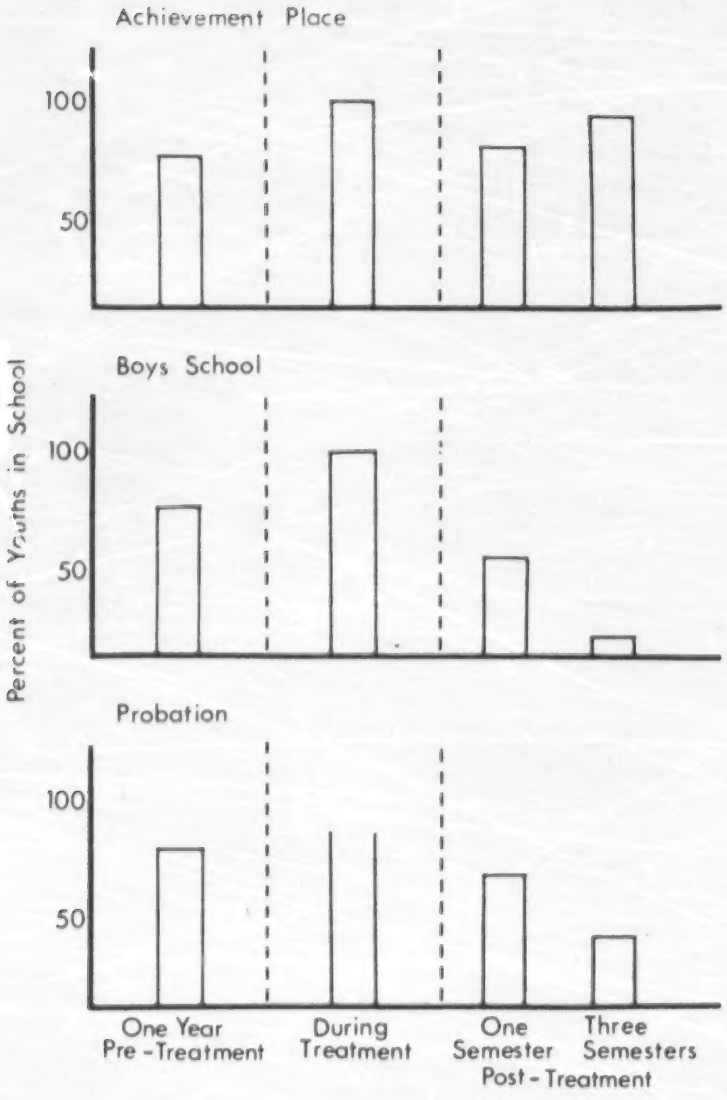

Figure 3. Percents of Youths in School Over Time

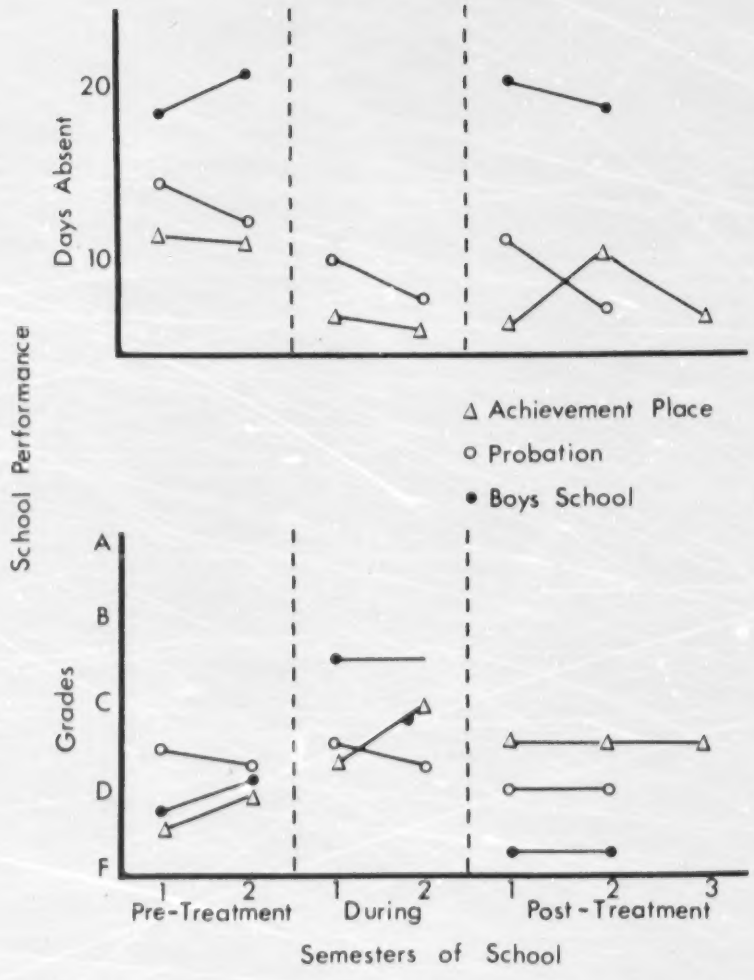

Figure 4. School Performance Over Time:
Grades and Days Absent

semester for two semesters prior to treatment and again averaged about 20 days absent for each semester after treatment. The Boys School did not supply us with information regarding their attendance at their school, but we would guess that the youths had fewer than 20 days absent each semester during treatment. The Probation Youths averaged about 15 days absent each semester prior to treatment, about 8 to 10 days absent during treatment, and about 7 to 10 days absent after treatment. Data for only two post-treatment semesters are shown for the Boys School and Probation groups because, as we saw in Figure 3, there were only a few boys in these two groups still in school by the third semester. The Achievement Place youths averaged about 12 days absent each semester prior to treatment, about 3 to 4 days absent during treatment, and about 3 to 8 days absent after treatment.

The average grades earned by the youths are shown in the bottom graph in Figure 4. The grades for the Boys School youths averaged "D-" to "D" prior to treatment, increased to a little over a "C" average while they attended the school in the institution during treatment, and then decreased to about a "D-" average each semester after treatment. The grades for the Probation youths averaged a little over a "D" each semester before, during, and after treatment. The grades for the Achievement Place youths averaged "D-" to "D" before treatment, increased to "C-" to "C" during treatment, and remained at about a "C-" average each semester after treatment.

These school data indicate that the Achievement Place youths were similar to the youths in the other two groups prior to treatment but after treatment were more successful than the Boys School youths or Probation youths in terms of staying in school, attending regularly, and earning grades. Although the "C-" average maintained by the Achievement Place youths after treatment is probably not sufficient to arouse the admiration of most middle-class parents, it does indicate that the youths were passing their classes and progressing toward the graduation requirements for junior high and high school.

The police, court, and school data indicate that the Achievement Place youths are progressing much better than their peers who were sent to the Boys School or placed on Probation. As suggested earlier, these data may reflect a "treatment effect" or a "population effect" attributable to the initial differences among the youths because the youths were *not* randomly assigned to the groups. We plan to collect similar data on a sample of randomly selected youths to provide an experimental evaluation of the long term effects of the Achievement Place treatment program.

However, even if the results of this random selection procedure show that Achievement Place youths do no better than youths who were sent to an institution, we could continue to advocate replacing most institutions with group home treatment programs. We would do this for two reasons. First, group home treatment programs are more humane than institutional programs because the youths receive more individual care, they remain in close contact with their community and parents and friends, and programs can be provided to teach them important social, family, and community-living skills. Second, group homes are less expensive to operate. Table 1 shows that the cost per bed of purchasing, renovating, and furnishing Achievement Place was about one-fourth the cost of building an institution. And, the operating costs per youth for Achievement Place are less than one-half the operating costs for the Boys School in Kansas. To build a Boys School for 250 youths and operate it for one year would cost about 8 million dollars. To

	Probation	Achievement Pl	Institution
Capital Investment Per Youth	No Data	$6,000	$20,000 to $30,000
Yearly Operating Cost Per Youth	$500	$4,100	$6,000 to $12,000

Table 1. Comparative Costs of Three Treatment Modes (June 1, 1969)

purchase, renovate, and furnish group homes for 250 youths and operate them for one year would cost about 2.5 million dollars, a savings to the taxpayer of 5.5 million dollars. If the follow-up data collected at Achievement Place and at other group homes eventually provide evidence that systematic group home treatment programs are also more effective than institutional programs, we can expect a major shift away from institutions and toward community-based programs.

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THE USE OF BEHAVIOR MODIFICATION IN A COOPERATIVE SPECIAL EDUCATION AND VOCATIONAL REHABILITATION PROGRAM*

Jerre W. Gist and Michael W. Welch

The program which we are about to describe was developed at the Center for Developmental and Learning Disorders at the University of Alabama in Birmingham. The Center requires a word of explanation. Only in recent years has there been a concerted national effort to redirect the education of professionals and sub-professionals to serve the retarded, and to establish facilities for the assessment of techniques and practices. In 1964, Public Law 88-164 provided funds for the construction of University Affiliated Facilities for the Mentally Retarded. These centers were to serve as education and training resources to develop the manpower needed to deal with developmental disorders. The Center for Developmental and Learning Disorders (CDLD) in Birmingham is one of the first such centers to be completed and put into operation. CDLD is a ten-story building with multidisciplinary training, research, and clinical programs.

Our work falls within the Division of Special Education and Rehabilitation. We offer a special rehabilitation program to over seventy mentally retarded clients ranging in age from 13 to 25, and in IQ from below fifty up, with the majority falling in the educable range. The focus, of course, is not solely on the rehabilitation of these clients, for the program is used in training professionals and for demonstration and research purposes as well.

When the program first began, it operated essentially as a traditional evaluation center, but we soon found the typical diagnostic techniques lacking. In May, 1970, our staff decided that some form of operant conditioning, specifically a token economy, would provide the best way to organize the program. Staff training began in June, and by the end of the month we had begun writing job descriptions for all the jobs that student-clients might perform during the day. The staff began taking baseline data in October, 1970, but it was not until November, after more staff training, that we developed adequate and unbiased methods of collecting data. In effect, it took six months, or from May to mid-November, to put the token economy into operation.

Since then, the system has gone through many refinements. Whereas the original data for 25 clients were hand-plotted, we now use a computer system to print graphs and tabulate each client's daily token bank account. We also switched from metal tokens–which could be borrowed, stolen, or hoarded–to paper tokens much like cashier's checks made out to the client. The banking system has eliminated the necessity of holding large numbers of tokens, for clients can now write checks when they wish to purchase something. Whereas once we simply charged tokens for absences, we now allow clients to earn sick leave days by attending regularly during a month and to buy insurance with tokens to protect against absence due to illness. The system has also evolved from an unsophisticated dispensing of rewards to reinforcement which is more directly a consequence of appropriate behavior. The

*A further description of the program and how to apply it may be found in a book prepared by the authors and entitled, *The Open Token Economy, A Handbook for a Behavioral Approach to Rehabilitation*, to be published by Charles C. Thomas Publishers in 1974.

placement of clients on jobs no longer has to be on the basis of biased personal opinion, but rather can be based on hard data collected and analyzed for each individual.

Our major objective, resting on the assumption that behavior is lawful and predictable, is to change unacceptable job behaviors to acceptable job behaviors. We are both an evaluation and training facility, but we do not do specific skill training. Our focus is upon what we refer to as "auxiliary work behaviors," the skills such as grooming, punctuality, and persistence in a task which are needed in any work setting. By using behavior modification techniques, we define these behaviors operationally so that everyone understands what they mean. For instance, punctuality is defined by the time clock; one second after 8:30 A.M. is defined as late.

OBJECTIVES OF THE PROGRAM

The general objectives of the program, which apply both to academic performance and to work behaviors, are defined quite specifically as follows:

1. Ninety percent of the student-clients accepted in the program will improve twenty percentage points over baseline on all job descriptions assigned within a twelve-month period of time from initial placement.

2. Nine out of every ten student-clients accepted in the program will improve to an eighty percent criterion on all auxiliary work behavior job descriptions within a three-year period of time from enrollment.

3. Eight out of every ten student-clients will improve one grade level, as measured by the Wide Range Achievement Test, for every one year and six months they are actively engaged in academics.

4. Eight out of every ten student-clients will be employed and earning a wage within a five-year period from the date of initial enrollment.

5. Twenty-five percent of the student-clients enrolled in the program will be placed on part-time, full-time, or sheltered work jobs each year as measured by the rehabilitation counselor's closure records.

In addition, each area of the program is organized around still more specific objectives. We have tried to define success on any task in terms of observed behavior.

THE OPEN TOKEN ECONOMY

We have called our system an "open" token economy because it is a day treatment program which does not achieve total control over the clients. The clients are at the Center from 8:30 to 2:00 each day, but after they return home, we have no control over their behavior. This variation of a token economy may not be as effective as a "closed" system used in an institution, where round-the-clock control of behavior is possible and where, barring ethical constraints, many of the residents' basic needs such as sleep, food, and recreation can be made available only if

behavior is appropriate. For our system to work, we must be able to make reinforcements available only when the client demonstrates a behavior to a certain criterion of success. We have found that the best way to find out what clients want and will work for is to ask them. A positive reinforcement to one client may not be a positive reinforcement to another client. We try as far as possible to use as reinforcers what are sometimes called "natural contingencies," things which we get without having to do anything to get them. For example, television watching is generally available to most people and does not have to be earned; in our program we would try to make television viewing contingent upon successful completion of learning tasks. Figure 1 is a listing of several of the reinforcers which we use and their associated costs in tokens.

Although we emphasize natural reinforcers, we have received criticism from parents because we have made clients pay in tokens for lunch. If they do not work and earn the money, they do not eat. However, we have found that the program was not right for the student if he continually did not work and missed lunch. The burden of responsibility in such a case is on the staff. When you adopt an operant system, you also take on the belief that if a child is not succeeding, it is your fault rather than his. The staff member can no longer point to the laziness of the student; he must reexamine the ways in which he is attempting to teach and reward the student.

Job Descriptions

Clients are given complete descriptions of required tasks in the form of "job descriptions." We have prepared over two hundred such descriptions for use in all areas of the program. The job description is a complete listing of instructions as to what steps are required to complete a job (see Figure 2 for a sample job description). The task to be performed by the student-client is written in its simplest form, taking one major step at a time. The client is not required to complete the job, but is reinforced for that portion of the job which has been completed. This procedure capitalizes on the concept of "successive approximations" toward the terminal goal of a successfully completed job.

Each job description also contains space for "number of times idle," "excessive talking," and "leaving the work area." Timers are set to go off randomly, and if the client is engaged in any of these behaviors when the timer bell rings, he is given a mark for that behavior and is penalized accordingly. When the job description is completed and the percentage of steps performed is figured, these marks count as "no" checks, lowering the percentage of "yes" checks earned for the total job and resulting in a smaller payment in tokens. Clients also earn tokens for acceptable performance on auxiliary work behaviors. Job descriptions for grooming, use of the time clock, and punctuality, for example, are organized in steps just as the work job descriptions are. Figure 3 represents the job description for grooming.

In order that clients may progress through a sequence toward greater job readiness, jobs are graded by difficulty, complexity, and responsibility. Three types of jobs have been developed. Blue Level job descriptions printed on blue paper consist of jobs which are menial in nature and which are considered entry level jobs. Examples of these jobs are: wet mopping, cleaning the rest rooms, use of small hand tools, cleaning the sink, and dish washing.

CENTER FOR DEVELOPMENTAL AND LEARNING DISORDERS

Effective September 11, 1972

*Morning Break (9:30-10:00)	10 Tokens
*Lunch (11:45-12:30)	20 Tokens
*Leave Building for Lunch (11:45-12:30)	60 Tokens
*Maintenance & Transportation Check	35 Tokens
*Checkbook	15 Tokens
Redeem Time Card if Not in "OUT" Rack at End of Day	5 Tokens
Purchase New Punctuality Card	5 Tokens
Redeem Punctuality Card if Lost	2 Tokens
Day Absent (Without Insurance or Sick Leave)	20 Tokens
Day Off	80 Tokens
Counseling	8 Per 15 Minutes
Use of Telephone	5 Per Call; 10 Minute Limit
Recreation	5 Per 15 Minutes
Quiet Time	10 Per 30 Minutes
T. V. Time	10 Per 30 Minutes
Individual Radio Time (With Quiet Time)	10 Per 30 Minutes
Individual Radio Time (While Working)	5 Per 30 Minutes
Group Radio Time (While Working)	5 Per 30 Minutes Per Person
Money Exchange (or Purchase of Merchandise During Morning Break)	1 Cent Per Token
Driver Education (Behind Wheel in Car)	20 Per 30 Minutes
Wash & Dry (Roll and Comb) Hair	5 Tokens
Hair Cut	5 Tokens
Insurance (10 Tokens for Issuance Fee)	20 Tokens Per Month

*Can Be Purchased Only at Bank Time.

Figure 1. Privileges and Their Associated Costs in Tokens

CENTER FOR DEVELOPMENT AND LEARNING DISORDERS
TOKEN ECONOMY

11-17-72

NAME _____

DATE _____

CLEANING SINK
TOKEN VALUE 3 per ½ hour

YES NO

1. ASSEMBLE SUPPLIES AND EQUIPMENT:
   A. CLEANSER
   B. SPONGE
   C. CLOTH
2. DAMPEN SPONGE AND SQUEEZE OUT INTO SINK SO THAT BOTH SINKS ARE DAMPENED.
3. SPRINKLE CLEANSER LIGHTLY OVER SINK SURFACE.
4. SCRUB WITH SPONGE TO REMOVE FILM, STREAKS, OR STAINS.
5. CLEAN AND RINSE SPONGE AND SINK.
6. DRY SINK WITH CLOTH.
7. WIPE OFF BACK OF SINK BEHIND FAUCETS.
8. WIPE WATER SPOTS OFF FAUCETS.
9. WIPE OFF DISH DRAIN AND TRAY, WIPE UNDER DRAIN TRAY.
10. PUT CLEANING ARTICLES AWAY.
11. INFORM SUPERVISOR WHEN FINISHED.

WORKS AT A STEADY PACE:
EXCESSIVE TALKING - NO. TIMES _____
LEAVING WORK AREA - NO. TIMES _____
IDLE - NUMBER TIMES _____

TIME STARTED _____
TIME FINISHED _____
TOTAL TIME _____

CODE 027
TOKENS _____
PERCENTAGE _____%

Figure 2. Job Description: Cleaning a Sink

CENTER FOR DEVELOPMENTAL AND LEARNING DISORDERS
TOKEN ECONOMY

2-9-72

NAME _____

DATE _____

GROOMING
TOKEN VALUE 4

YES NO

1. CLEAN HAIR
   A. NO OBVIOUS DANDRUFF
   B. NON-GREASY (GIRLS)
   C. NO EXCESSIVE HAIR TONIC (BOYS)

2. HAIR NEATLY COMBED

3. BODY CLEANLINESS
   A. CLEAN TEETH
   B. CLEAN ARMS (NO OBVIOUS MATERIAL)
   C. CLEAN HANDS AND REASONABLE NEAT AND CLEAN FINGERNAILS
   D. CLEAN EARS

4. NO BODY ODOR

5. CLEAN AND NEATLY PRESSED CLOTHES (NO OBVIOUS DIRT OR EXCESSIVE WRINKLES)

6. CLEAN SHOES (FREE OF DIRT OR DUST - NOT OBVIOUSLY DIRTY)

7. CLEAN SHAVEN (BOYS) SHAVEN LEGS AND UNDERARMS (ALL VISIBLE HAIR ON LEGS SHOULD BE REMOVED - GIRLS)

8. NATURAL LOOKING AND NEATLY APPLIED MAKE-UP (GIRLS) SOCKS (BOYS)

CODE 003
TOKENS _____
PERCENTAGE _____%

Figure 3. Job Description: Grooming

Green Level jobs carry a moderate degree of responsibility and call for some degree of decision-making. Green Level job titles include duplicating machine operator, copying machine operator, car washer, and drill press operator. Finally, the jobs with the highest prestige and the greatest demand for responsibility are called Red Level jobs—such positions as teacher's aide, mail clerk, bus driver, and courrier. Movement to a higher level is, of course, contingent upon successful performance at lower levels. When a student-client has moved up the ladder and is consistently successful on Red Level jobs, appropriate competitive employment is sought.

Academics are considered white level jobs and are not part of the hierarchy of jobs levels. However, the graded programmed materials used in class are labeled with successive numbers which carry increasing amounts of prestige. A person in Book 15, for example, is "looked up to" more than a person in Book 1. Tokens are paid at the end of each thirty-minute period to capitalize upon the effects of immediate reinforcement. By paying the student for jobs upon completion, we avoid "straining" the schedule of reinforcement by paying at the end of the day or the end of the week. However, a fading procedure is used with some Red Level jobs to shift more sophisticated students from payment after the completion of a job to payment at the end of the day. We have also instituted a point system for Red Level clients, allowing them to feel that they are more special than clients on the token economy. At an exchange rate of a penny a point, they can earn up to $1.50 or so a day.

Another thing to note about the payment of reinforcements is that we are able to build in some degree of flexibility. For instance, we receive maintenance and transportation checks from Vocational Rehabilitation for each of our students each day. We have made them earn this money. We might pay twenty cents for punching the time clock correctly and fifty cents for grooming. However, if a client is deficient in the area of grooming and adequate in other areas, we might make grooming worth $1.00 or even $1.50. As will be illustrated later, we also make use of a variety of reinforcers which are not listed on the token exchange sheet in Figure 1 and which can be tailored to the individual student at a particular time.

Evaluation and Baseline Data

Referrals to the Center are screened by a committee which refers candidates to the Special Education and Vocational Rehabilitation staffing for approval or rejection. When a student-client is accepted, data are collected about his medical, psychological, and educational characteristics, as well as his vocational interests and aptitudes. To obtain information about work performance, we observe a client for the first three weeks, using the random timer to count behaviors such as idleness and leaving the work area. The student-client is then re-staffed and, on the basis of the data, placed in appropriate program areas.

One central feature of the Open Token Economy is continuous evaluation. Not only is the initial evaluation computerized, but performance data collected throughout the student-client's tenure in the program are graphed and summarized by the computer. The major advantage of this method is to make evaluation more precise and specific. A fringe benefit of the system is that reports on clients no longer involve hours of writing; graphs along with minutes of staff meetings provide a detailed and meaningful report.

ACADEMICS

The Academic Program in the Open Token Economy is designed to teach basic special education subjects. There are four parts to the Academic Program: Junior High, Senior High, Resource Room, and Driver Education. Each of these will be described in turn.

Junior High

The objectives of the Junior High program, which are stated in behavioral terms, set standards for performance in reading, math, writing, and current events. EMR student-clients from 14 to 16 years of age who are beginning to be concerned about occupations are assigned to the Junior High class. A student reports to the class at 8:30, 10:30, and 12:30, receiving one token for punctuality at each of these times. The grooming sheet (Figure 3) is checked at 8:30, and the student is paid according to the percentage of satisfactory marks.

The class is divided into thirty-minute periods, and payment for each activity is made at the end of each half hour. The sequence of activiites is as follows: newpaper study, reading, math, break or individual work, unit presentation by teacher trainees, group work or individual work, lunch, and physical education. In each activity, payment is made according to criteria set out in job descriptions for academic work. Bonus tokens are paid for errands run by student-clients or as reinforcers for appropriate behavior not routinely rewarded. Other reinforcers used in the classroom include praise and privileges such as time to play games.

Since the Junior High class is a Special Education and Vocational Rehabilitation classroom, students are also offered pre-vocational training in another area of the building. The schedule is flexible so that students may go to other programs at defined times during the week.

Since the Junior High class is a training ground for undergraduate and graduate interns, we have an abundance of teaching help. Each intern assumes responsibility for the class for a minimum of one week, preparing a teacher unit and presenting it to the class. Each one also designs and carries out a program to decrease an inappropriate behavior or increase an appropriate behavior in one or more student-clients.

Senior High

Like the Junior High class, the Senior High class is organized around specifically stated objectives which emphasize reading and math skills. The Senior High classes meet from 8:30 to 12:00 and from 12:30 to 2:00. During the morning, student-clients who are at least 16 years old and who are basically at a pre-vocational level in their academic training work on math and reading skills. The goal is to bring these skills up to a level necessary for entering a higher level of vocational skill training. During the afternoon session, these students enter the pre-vocational area in order that the transition from Senior High to Vocational Rehabilitation status can be smooth and natural. In turn, the Senior High area is used in the afternoon by older students (ages 18-22) from the Vocational Rehabilitation program who need to strengthen math and reading skills. Thus, the afternoon program facilitates placement of students with acceptable work skills but weak academic skills. The class format is basically the same for both groups.

At the beginning of the school year, each student-client is given the Sullivan placement tests for math and reading and then given books and materials appropriate to his performance level. Tokens are paid for the amount of work done during each thirty-minute period—one token for one to four pages of math or reading, two tokens for five to nine pages, and so on. When a client completes a book in the reading series, he is given the Sullivan behavioral objectives and word checklist for that book and receives tokens for studying. After he performs all tasks specified on the checklist and exhibits the behaviors stated at an 80% performance level, he may proceed to the next book in the series. Students who must repeatedly go back through the same books are given additional worksheets to aid them. Similarly, in the math series, a student-client must demonstrate proficiency by answering 80% of the test problems before going on to the next book in the series.

As in the Junior High program, students are given tokens for punctuality, grooming, and prompt return from other areas of the building. They earn two tokens for bringing in a minimum of three newspaper clippings each day. In addition, they have access to other types of reinforcement. For instance, when work performance during the first four periods of the day meets a 60% performance criterion consistently, students may have the fifth period free to work on art, special reports, and individual projects. Time to play games such as checkers and cards is also made available if performance is acceptable. Some of the more popular reinforcers for academic work are: (1) participation in the Driver Education program; (2) bonus tokens for special improvement during work periods; (3) private conferences with the teacher to discuss problems; and (4) time to work on class projects such as parties.

Resource Room

The Resource Room is still another facet of the academic program. Student-clients from the Vocational Rehabilitation program report from their work stations to this area at prescribed times. Each student entering the Vocational Rehabilitation program is evaluated for approximately three weeks, both vocationally and academically. After evaluation, an individualized program of vocational and/or academic training is planned. The Resource Room also serves the two special education classes (Junior High and Senior High) by offering additional academic exercises matched to the individual.

The Resource Room offers instruction in math, reading, and information related to the world of work. In addition to the Sullivan programmed reading and math materials, the Hoffman Primary Language Arts and Phonics Program is used to review skills and to develop phonics skills in non-readers. Occupational information is presented by means of tapes, records, filmstrips, and pamphlets. One series of tapes offers an interest inventory, followed by fifty interview tapes which give the student-clients accurate information about particular jobs by allowing them to hear an interview for each job. A series of records and filmstrips present general information about daily living and working and require that students answer certain questions before completing the program. Students also learn to fill application forms and make change. Wherever possible, the programmed instruction format is used: the student-client receives information through some medium, he is tested on what he has learned, and he is reinforced for correct responses. Not only does this procedure individualize instruction, but it teaches each student to take

responsibility for his own education. Because of the variety of materials and opportunities for reinforcement offered, access to the Resource Room is often seen as a reward and has, in some cases, been made available to students when they perform satisfactorily in other areas of the program.

Driver Education

The objective for the Driver Education program is quite simple: 80% of the student-clients accepted will obtain a valid driver's license within a nine-month period from the date of enrollment. Referrals of candidates for the program are made by teachers in other areas who know each student's age, academic level, and readiness. A candidate's performance graphs are reviewed by the staff, and a decision is made to take the student into the program for an evaluation period of from one to two weeks. The instructor uses the Porto Clinic to evaluate traffic color recognition, visual acuity, depth perception, reaction time, and so on. After a complete evaluation is made with this and other instruments, the student is either accepted or rejected.

Once in the program, the student-client learns the material required for a learner's permit through filmstrips, movies, overhead projections, group discussion, and so on. As usual, they are paid tokens for work completed during thirty-minute time periods. When the student is performing at at least a 70% level, he is taken to the Driver's License Examining Station to take a written or oral permit test; if he passes, he goes to the Department of Revenue to file for a permit.

At this point the student-client enters the Behind-the-Wheel and the Traffic Safety Instruction programs. He drives with the instructor in a car donated by a car dealer. Because driving is an intrinsically rewarding activity for most students, we require students to pay for driving time rather than giving them tokens for driving. When the student is ready, he takes the state road test, pays the license fee, and graduates from the program.

WORK ACTIVITIES

The second major part of the Open Token Economy is the Work Activities program, which prepares students more directly for work by teaching auxiliary work behaviors and involving them in actual job performance. We have three major areas in the Work Activities program: the Print Laboratory, the Pre-vocational Laboratory, and what we call Activities in Daily Living. Each of these will be described in turn.

Print Laboratory

The jobs included in the Print Laboratory vary from the simple to the complex, with each task described in a job description written in terms of behavioral objectives (see Figure 4 for an example of a job description used in the Print Laboratory). The Print Laboratory, which operates on a semi-competitive level, serves a real function by offering the entire Center for Developmental and Learning Disorders offset printing, duplicating, paper cutting, stencil making, and plate making services. When a division in CDLD delivers work to the Print Laboratory, a charge sheet with an easily understandable format is filled so that student-clients can complete tasks with a minimum of supervision. Of course, the Print Laboratory

CENTER FOR DEVELOPMENTAL AND LEARNING DISORDER
TOKEN ECONOMY

11-15-72

NAME _____

DATE _____

SPIRIT PROCESS DUPLICATOR
TOKEN VALUE 3 per ½ hour

YES NO

1. REMOVE PROTECTIVE COVER FROM MACHINE.
2. TURN SPIRIT CONTAINER UPSIDE DOWN TO FILL WELL WITH LIQUID.
3. MOVE LIQUID REGULATOR TO CENTER OF BAR.
4. MOVE PRESSURE LEVER TO YOUR RIGHT AS FAR AS IT WILL GO.
5. TEAR OFF AND PLACE STENCIL UPSIDE DOWN ON CYLINDER AND CLOSE LOCK.
6. PLACE SCRAP PAPER IN PAPER TRAY AND RUN TRIAL COPIES.
7. REMOVE SCRAP PAPER AND REPLACE WITH MIMEOGRAPH PAPER.
8. RUN REQUESTED NUMBER OF COPIES.
9. REMOVE STENCIL FROM CYLINDER AND PLACE WITH PRINTED COPIES.
10. IF NO MORE STENCILS ARE TO BE RUN:
    A. MOVE PRESSURE LEVER TO LEFT AS FAR AS IT WILL GO.
    B. MOVE LIQUID REGULATOR TOWARD YOURSELF.
    C. TURN LIQUID CONTAINER UPSIDE DOWN.
11. PUT PROTECTIVE COVER ON MACHINE.
12. DELIVER COPIES TO DESIGNATED ROOMS ON REQUEST FORM AND RETURN IMMEDIATELY.
13. INFORM SUPERVISOR WHEN JOB IS FINISHED.

WORKS AT STEADY PACE:
EXCESSIVE TALKING - NO. TIMES _____
LEAVING WORK AREA - NO. TIMES _____
IDLE - NUMBER TIMES _____

TIME STARTED _____
TIME FINISHED _____
TIME WORKED _____

CODE 104
TOKENS _____
PERCENTAGE _____

Figure 4. Job Description: Spirit Process Duplicator

prints materials for the Open Token Economy program–paper tokens, job descriptions, worksheets, and data recording sheets. All of these activities combine to make the Lab a very prestigious assignment.

Again it is worth emphasizing that our goal is not to train print shop operators; it is to provide a setting in which student-clients must face job requirements similar to those in almost any work setting. The client is taught to care for machinery, follow safety rules, clean an area when he finishes, and, most importantly, follow through from the beginning (reading the request) to the end (delivering the printed copies) of a work assignment. A student moves from Blue to Green to Red Level jobs as he demonstrates ability to deal with more complex work assignments. The fact that his productions will be evaluated throughout the building motivates the student to acquire good work habits; his greatest reward is perhaps praise coming from other departments in CDLD.

Pre-vocational Activity Area

The Pre-vocational Laboratory offers still another set of graded jobs, ranging from the menial Blue Level jobs to the complex and prestigious Red Level jobs. In this part of the Token Economy, students explore new jobs and are at the same time evaluated on such basic skills as being punctual, sticking to a job, cooperating with others assigned to a job, and attending to detail. For instance, one area of Blue Level job descriptions deals with building services or custodial work. Job descriptions in this area stress such basic skills as the importance of gathering and storing appropriate tools and supplies. The assumption is that every student, whether he ends up in custodial work or not, needs to know how to care for and clean certain materials. Although the student learns to perform cleaning tasks, it is still up to a future employer to teach him exactly when and how to mop a certain floor.

Another part of the pre-vocational program is Arts and Crafts, which allows for work on attention to detail, following instructions, color discrimination, and success in creation. Since craft activities such as ceramics are put in the form of job descriptions, they teach the same kinds of job skills which actual work assignments teach.

In an intake evaluation, each student-client explores the world of work on a simulation basis and is assigned activities based on his previous work experiences or experiences doing chores at home. Based upon standardized tests and success in work activities, he learns what he can do and what he must learn.

Activities in Daily Living

The Activities in Daily Living program, much like the Pre-vocational program and Print Laboratory, focuses upon habits and skills necessary to obtain and keep a job. In addition, this program teaches the performance of tasks necessary in keeping a clean, livable home or living area. The Activities in Daily Living unit uses job descriptions in such categories as personal appearance, care of the home, cleaning, laundering, ironing, bedmaking, care of appliances and equipment, sewing, and child care. Junior High, Senior High, and Vocational Rehabilitation students are all served by the program. After a student reporting to the area has been checked on punctuality and grooming, he pulls from a file job descriptions which are appropriate to his level in the program and punches the time clock. He then selects

materials and sets up his work area. Students who are in the work area working steadily and quietly are rewarded with tokens or praised when the random timer sounds. Upon completion of a job description, the student-client clocks out, checks the job description, and submits it to the supervisor for checking and payment. As the student-client becomes more responsible and requires less supervision, job interviews, counseling sessions, work-study arrangements, and eventually job placements are arranged.

There are several intrinsically rewarding features of the program. For example, many visitors and groups tour the unit, which is considered a "show place" in the Center, and remark on how "nice" everything looks. Workers in the laundry center, which is responsible for linens in three divisions of the Center, receive praise from the staff in these divisions for jobs well done. Students involved in sewing activities receive requests and envious remarks from other student-clients. And finally, students involved in cooking not only gain satisfaction from making something they enjoy but often prepare refreshments for parties or coffee breaks and even lunches for staff members in the Center. Cooking is so enjoyable to most students that it is sometimes held out as a special reward for attendance or punctuality. We find that the program works best when students naturally enjoy an activity and can at the same time learn something by being helped to monitor their own work habits and sharpen their work skills.

EVALUATION OF THE OPEN TOKEN ECONOMY

The flow of data into computerized storage assures that we have continuous and accurate records of client activities and progress. At the end of each day, each client's punctuality card and job descriptions are collected, checked, and stored. At regular intervals, usually every eight to ten weeks, the data are broken down into records for each individual and stored permanently. Clients are staffed once a week using computer plotted graphs of information collected from job descriptions since the previous staffing. The clients' current medical, psychological, educational, and social information is also presented in order to keep the staff appraised of overall progress. When appropriate percentage levels are reached on auxiliary work behaviors and top level job descriptions, a referral for placement is made to the vocational rehabilitation counselor. Job family areas are recommended as employment possibilities based on a client's performance on related job assignments and work sample testing.

With all of this information readily available, it is not difficult to assess the success of the program. In a preliminary study, we examined changes in 22 educable mentally retarded clients who were the first students in the program. When we compared performance in a 13-day baseline period without reinforcement contingencies and performance in a 10-day period of treatment, we found that there were significant improvements in nearly all of the clients. Only 15% of the graphs (9 of 66) showed no significant improvement over the baseline period. Only 9% of the subjects (2 out of 22) showed no significant improvement for the three behaviors studied.

By comparison, other studies have reported that somewhat higher percentages of subjects are unresponsive to token economies. Ayllon and Azrin (1968) reported that 18% of their chronic schizophrenic patients were unresponsive to the reinforcement. Zimmerman, Zimmerman, and Russell (1969) reported that three of

seven retardates were unaffected by token reinforcement. Ray and Shelton (1968) reported a 13% unresponsive rate with disturbed adolescent retardates. The majority of economies reported are closed systems; that is, subjects are under twenty-four hour control. The program we have described is a day treatment program, and yet it seems to change behavior quite effectively.

A more important question to ask about the success of the program is this: Does it lead to job placement and employment stability? Information on the initial 22 clients shows that 37% are employed full time; 50% are employed either part time or full time. Another 22% of the clients are still enrolled in the program, while 18% were referred to other rehabilitation programs. The remaining nine percent (2 out of 22 students) are neither enrolled in a rehabilitation program nor employed. They represent the only clear failures for the three-year period. One of these clients failed due to a degenerative brain syndrome and the other due to a physical inability to perform the work (hemiplegia).

Although we are quite pleased with these preliminary indications of the program's effectiveness, we hope that more research will be conducted. For example, it would be useful to relate success on job descriptions to success on actual jobs or to determine which types of clients benefit most from a token economy system. It would also be useful to see how the token economy system compares to a traditional rehabilitation program. For now, we can say that the program has proven effective over a three-year period and that, in our judgment, it has a greater variety of applications than we had originally envisioned.

CENTRAL FEATURES OF THE PROGRAM

The program which we have described may not be the ideal; in all probability, it will continue to undergo revision as we learn new things. However, whatever the specifics of the program, there are certain features incorporated in the Open Token Economy which seem sound in almost any educational setting:

1. Close attention is paid to specifying goals and objectives for the learner so that everyone knows when success is achieved.

2. Time and care are invested in staff training before the program begins and when new staff members are added so that all staff members contribute to an organized and consistent program. Part of staff training leads to an understanding that it is the teacher and not the student who fails when learning does not take place.

3. The program is designed so that each individual receives the kinds of training which fit his level of ability and can progress through a sequence of levels at his own rate.

4. Wherever possible, learning takes place without explicit teaching, for students learn by actively engaging in activities which have been broken into manageable steps.

5. The program rewards success and either penalizes or ignores failure.

6. The evaluation process becomes an objective assessment made continuously throughout the learner's career. In other words, a student's training and placement are based on actual performance rather than on global opinions.

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